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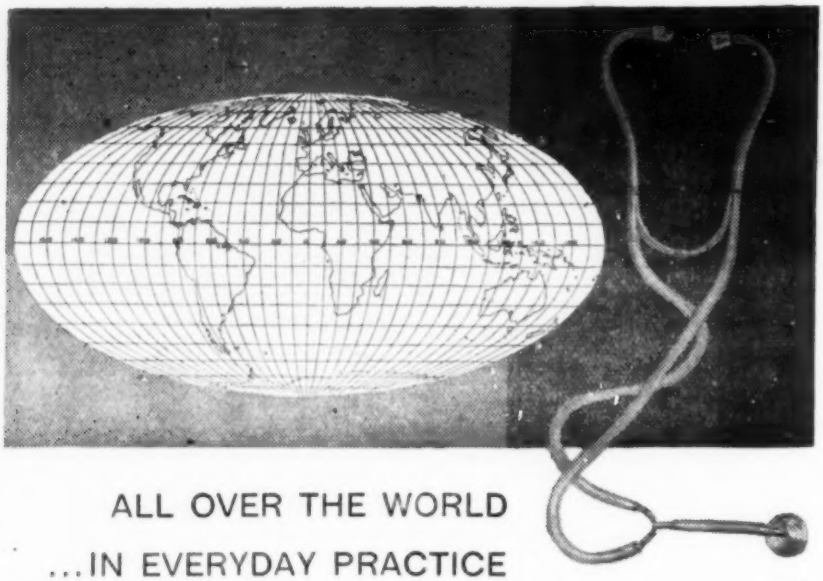

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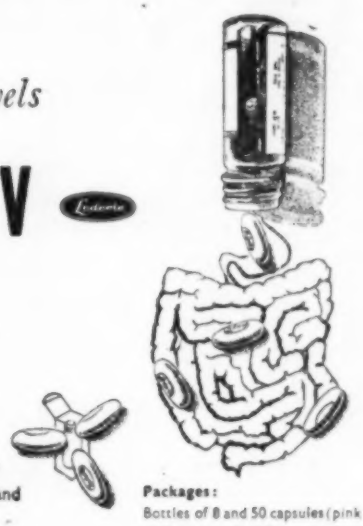

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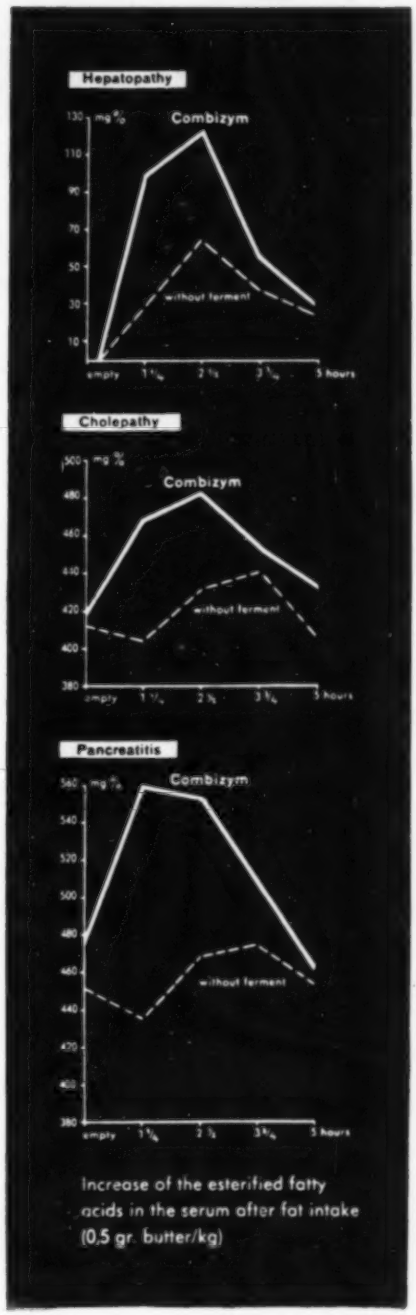

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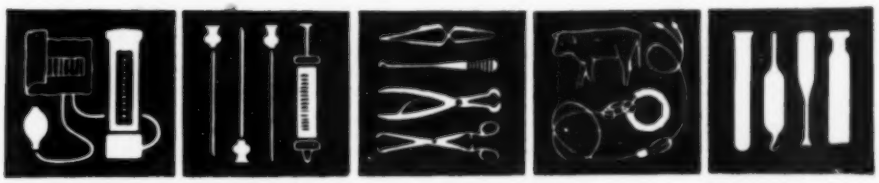

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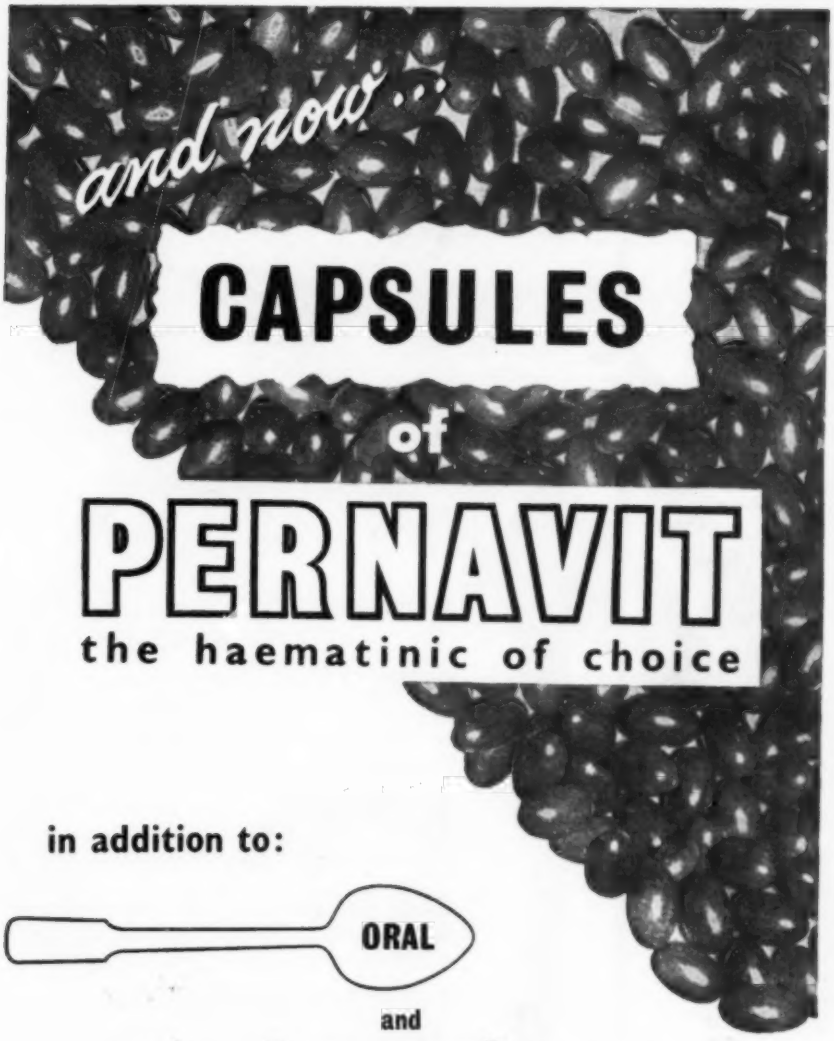

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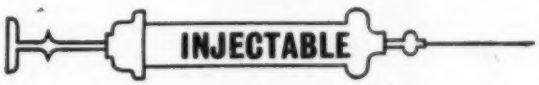

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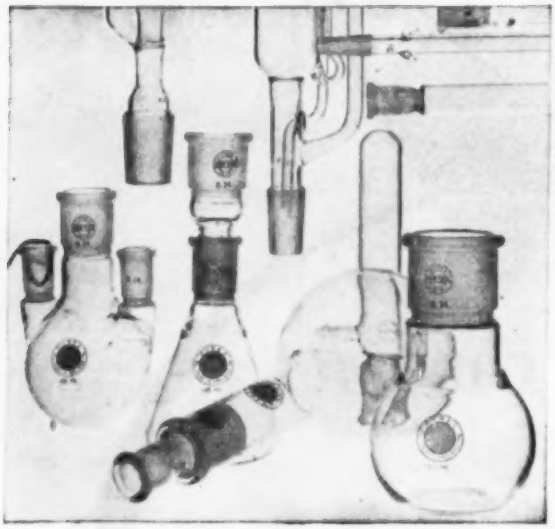

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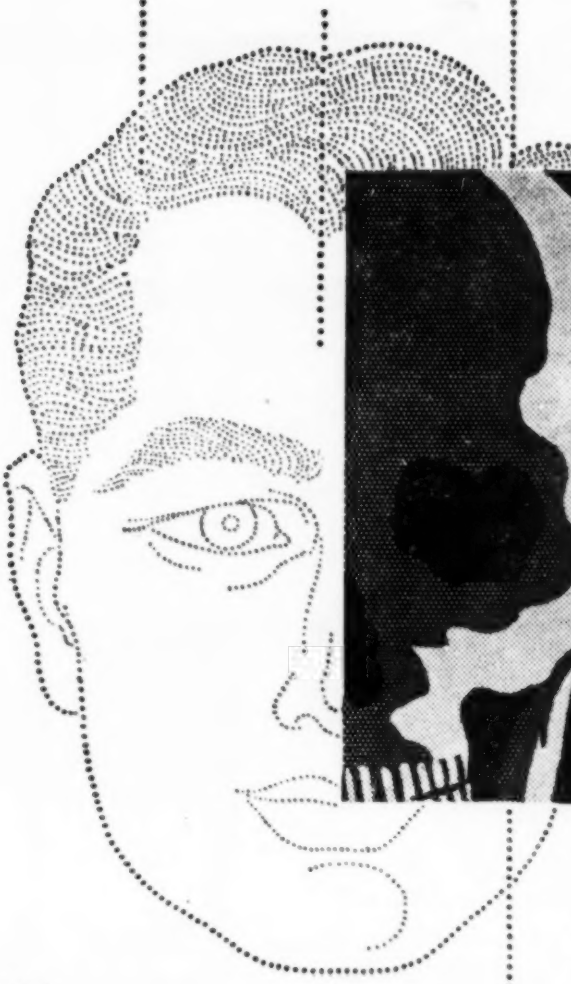

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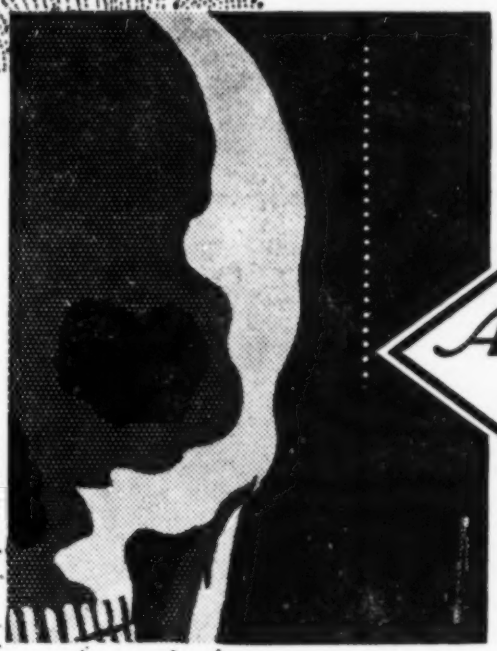

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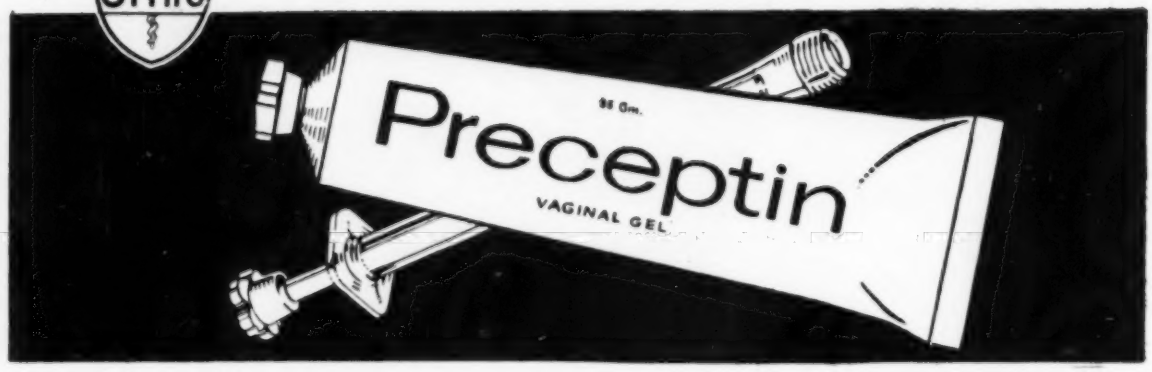

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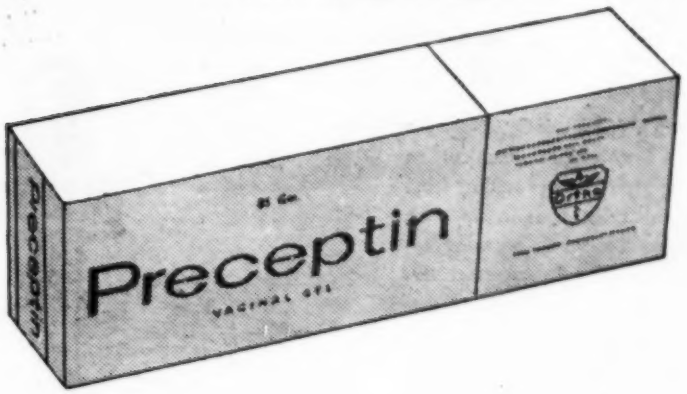

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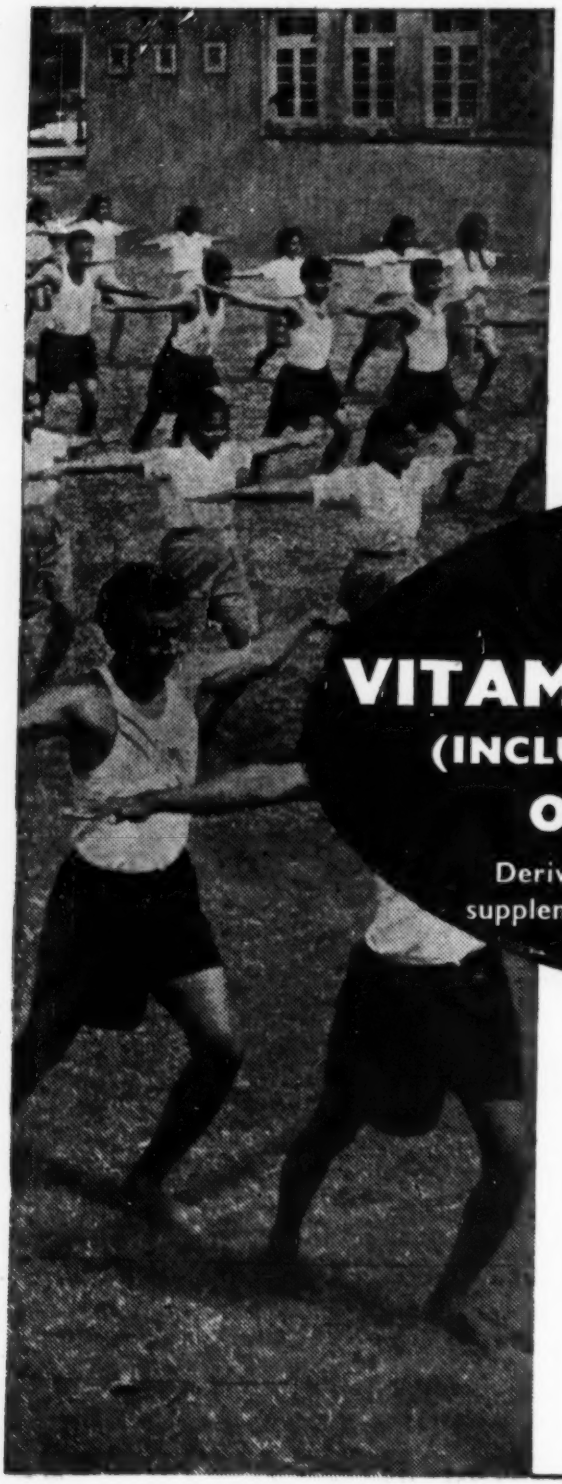

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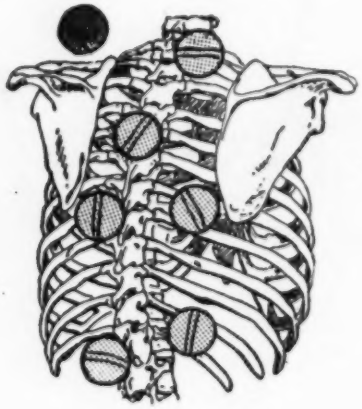

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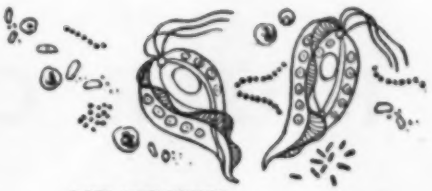

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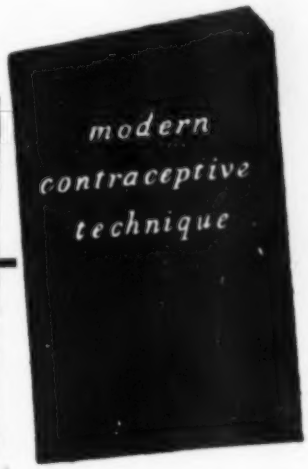

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CALCUTTA
DECEMBER 1, 1959

ORIGINAL ARTICLES

THE SPLEEN IN THALASSAEMIA

A. M. MUKHERJEE, M.B. (CAL.), D.C.P. (LOND.)

P. C. SEN GUPTA, M.B. (CAL.), D.PHIL. (CAL.) AND J. B. CHATTERJEA, M.D. (CAL.)

School of Tropical Medicine, Calcutta

Once thought to be limited to the Mediterranean races, thalassaemia now appears to have an almost world-wide distribution. In the non-Mediterranean races, the disease has so far been reported in children of English, German, Spanish, Mexican, American Negro, Egyptian, Indian, Chinese and Thai extraction (Napier *et al*, 1939 ; Das Gupta, Chatterjea and Ray, 1954 ; Das Gupta *et al*, 1958). In India, the disease appears to be fairly common. Thalassaemia, either in homozygous form or in combination with abnormal haemoglobins, E, S or D, has been reported from various parts of India (Chatterjea *et al*, 1957a and 1957b ; Shukla *et al*, 1958 ; Sukumaran and Sanghvi, 1958).

An account of 194 cases of thalassaemia either in homozygous from or in combination with haemoglobin E has recently been published (Chatterjea, 1959). Majority of the cases belonged to Hb.E.-thalassaemia disease. The incidence of Hb.E trait and of thalassaemia trait was found to be about 4 per cent each in the Bengalee population in Calcutta. The lower incidence of homozygous thalassaemia in the above series was presumably due to the fact that being a more serious condition many of the cases of homozygous thalassaemia would probably die too early for timely recognition and proper appraisal. Splenectomy was done in a number of cases of this series with variable results (Chatterjea, *loc.cit*).

In this communication the results of pathological examination of thirty specimens of spleen are presented. Twenty-four of the patients were suffering from Hb.E-thalassaemia and six from homozygous thalassaemia.

MATERIAL AND METHODS

Twenty nine specimens of spleen were obtained at operation and one at necropsy. The gross anatomical and histological changes were studied. The paraffin sections prepared from formol-saline-fixed splenic tissue (5-6 μ thick) were employed and stained with (*a*) haematoxylin and eosin, (*b*) Gordon and Sweet's method of reticulin stain, (*c*) Perl's reaction for iron pigment, (*d*) periodic acid-Schiff (PAS) reaction.

OBSERVATIONS

An analysis of the data relating to the cases is presented in Table 1.

All the thirty cases were of Indian nationality. Out of them, sixteen were male patients and the remaining fourteen cases were females.

Age-group and average of weight of the spleen of the cases are given in Table 2.

From Table 2 it will be observed that out of thirty cases of this series, twenty-one cases were below 10 years of age and the remaining nine cases were found between 11 and 25 years. The average weight of the spleen was found to be markedly increased in the various age-groups. Normally the average weight of the spleen is 30 g. at the age two years and 90 g. at the age 12 years (Baty *et al*, 1932).

TABLE 1

Sl. No.	Name of the patient, Age, Sex, Hb.	Weight of spleen (g.)	Capsule	Trabeculae	Congestion and dilatation of sinuses	Red pulp	Haemopoietic activity	Erythrophagocytosis	Malpighian follicles	Haemosiderin pigment	Haemosiderotic nodule	Diagnosis
1.	K.S., 8 yrs. Mch. Hb—4·5 g. HbF—50-60%	562	Slightly thickened	Prominent	Slight	Hyperplasia of R E cells, foam cells—a few, singly or in small clumps	Very marked. Erythroid and myeloid cells reaction similar. Megakaryocytes—moderate no.	Nil	Attenuated	Nil	Nil	HbE-th
2.	P.B., 23 yrs. M. Hb—6·6 g. HbF—21%	780	Moderately thickened	Prominent	Moderate	Hyperplasia of R E cells, moderate no. of foam cells	Moderate. Erythroid and myeloid cells reaction similar. Megakaryocytes— nil	Present	Attenuated	Nil	Nil	HbE-th
3.	P.R.G., 7 yrs. Fch. Hb—7·5 g. HbF—40%	540	Moderately thickened	Very prominent	Moderate	Hyperplasia of R E cells, moderate no. of foam cells	Slight. Normoblasts a few, Myeloblasts a few. Myeloblasts cytes—nil	Present a few	Reacting normal looking	Scanty	Nil	HbE-th
4.	K.B., 7 yrs. Fch. Hb—3·1 g. HbF—18-20%	320	Slightly thickened	Prominent	Moderate	Hyperplasia of R E cells, a few foam cells	Very marked. Erythroid and myeloid cells reaction similar. Megakaryocytes—moderate no.	Nil	Moderate atrophy	Scanty	Nil	HbE-th
5.	T., 6 yrs. Fch. Hb—5·8 g. HbF—34-40%	460	Slightly thickened	Not prominent	Moderate	Hyperplasia of R E cells, foam cells—absent	Moderate. Erythroid predominant eosinophilic myelocytes—fair no. Megakaryocytes—moderate no.	Nil	Reacting follicles showing germinating centre	Scanty	Nil	HbE-th
6.	K., 3½ yrs. Fch. Hb—4·25 g. HbF—27%	220	Slightly thickened	Prominent	Moderate	Hyperplasia of R E cells, a very few foam cells	Slight. Erythroid and myeloid cells—a few. Megakaryocytes—scanty	Nil	A few reacting follicles	Nil	Nil	HbE-th
7.	A.M. 2½ yrs. Mch. Hb—4·3 g. HbF—39%	190	Slightly thickened	Prominent	Moderate	Hyperplasia of R E cells, a few foam cells.	Moderate. Erythroid —predominant than myeloid cells. Megakaryocytes — moderate no.	Nil	Reacting follicles with thin rims of mature lymphocytes	Scanty	Nil	Hom-th
8.	P.P., 6 m., Fch. (P.M. Case) Hb—2·03 g.	110	Slightly thickened	Not prominent	Slight	Slight hyperplasia of R E. cells, foam cells—absent	Moderate. Erythroid predominant. Megakaryocytes — moderate no.	Nil	Normal looking	Nil	Nil	Hom-th
9.	K.C., 6 m., Mch. Hb.—4·9 g. HbF—70—75%	280	Slightly thickened	Not prominent	Moderate	Hyperplasia of R E cells, a few foam cells	Moderate. Erythroid predominant. Megakaryocytes—nil	Nil	Attenuated	Scanty	Nil	Hom-th
10.	A.P., 4 yrs. Fch. Hb—3·4 g. HbF—18%	250	Slightly thickened	Not prominent	Moderate	Hyperplasia of R E cells, a few foam cells	Moderate. Erythroid predominant. Megakaryocytes—scanty	Nil	Moderate atrophy	Nil	Nil	Hom-th
11.	D.N. (with NMA) 21 yrs. male. Hb—2·3 g. HbF—40-50% (An area of sarcoid-like nodule)	610	Slightly thickened	Prominent	Very marked	Marked hyperplasia of R E cells, a few foam cells	Slight. A few normoblast. No megakaryocyte	Nil	Slight atrophy	Scanty	Nil	HbE-th

12.	P.R.C., 4 yrs. Fch. Hb—3·5 g. HbF—28%	125	Slightly thickened	Not prominent	Slight	Slight hyperplasia of R E cells, a few foam cells	Slight. A few normoblasts. Megakaryocytes—nil	Present a few	Normal looking	Nil	Nil	HbE-th
13.	I.C., 9 yrs. Female. Hb—69 g. HbF—70-80%	610	Slightly thickened	Not prominent	Moderate	Hyperplasia of R E cells, moderate no. of foam cells	Very marked. Predominant erythroid reaction. Eosinophilic myelocytes—fair no. Megakaryocytes—large no.	Present a few	Atrophy	Scanty	Present	Hom-th
14.	J.K., 24 yrs. Male. Hb—9·5 g. HbF—40%	620	Slightly thickened	Not prominent	Moderate	Hyperplasia of R E cells with increase of fibrous tissue element. Moderate no. of foam cells	Slight. Mainly erythropoietic. Megakaryocytes—nil	Present a few	Slight atrophy	Nil	Nil	HbE-th
15.	S.M.S., 14 yrs. Female. Hb—6 g. HbF—29%	1027	Moderately thickened	Prominent	Slight	Hyperplasia of R E cells with increase of fibrous tissue element, a few foam cells	Very marked. Erythroid and myeloid cells reaction similar. Megakaryocytes—moderate no.	Nil	Slight atrophy	Nil	Nil	HbE-th
16.	C.C.M., 8 yrs. Male. Hb—4·35 g. HbF—50%	320	Slightly thickened with area of perisplenitis	Prominent	Slight	Hyperplasia of R E cells with increase of tissue element, moderate no. of foam cells	Moderate. Erythroid activity predominant. Megakaryocytes—nil	Nil	Normal looking	Scanty	Nil	HbE-th
17.	P.D., 2 yrs. Mch. Hb—5·22 g. HbF—91%.	210	Slightly thickened	Not prominent	Moderate	Slight. Hyperplasia of R E cells, a few foam cells	Slight. Predominant erythroid activity. Megakaryocytes—nil	Nil	Slightly attenuated	Nil	Nil	HbE-th
18.	B.M., 6 yrs. Mch. Hb—4·6 g. HbF—10%	663	Slightly thickened	Slightly prominent	Moderate	Hyperplasia of R E cells, moderate no. of foam cells	Moderate. Erythroid-myeloid reaction similar. Eosinophilic myelocytes fair no. Megakaryocytes—nil	Present a few	Atrophy	Scanty	Present	HbE-th
19.	D.D., 4 yrs. Mch. Hb—2·9 g. HbF—22-25%	490	Slightly thickened	Not prominent	Moderate	Hyperplasia of R E cells., a few foam cells	Very marked. Erythroid and myeloid cell reaction—similar. Eosinophilic myelocytes fair no. Megakaryocytes—moderate no.	Present a few	Atrophy	Scanty	Nil	HbE-th
20.	P., 10 yrs., Mch. Hb—3·5 g. HbF—15%	302	Slightly thickened	Slightly prominent	Moderate	Hyperplasia of R E cells, a few foam cells	Slight. Mainly erythroid. Megakaryocytes—moderate no.	Present a few	Normal looking	Scanty	Present	HbE-th
21.	C.S., 16 yrs. Female. Hb—6·09 g. HbF—25-30%	970	Moderately thickened, perisplenitis subcapsular haemorrhage	Moderately prominent	Very marked	Hyperplasia of R E cells, a few foam cells	Slight. A small foci of erythropoiesis. Megakaryocytes—scanty.	Present in fair no.	Slight atrophy	Scanty	Present	HbE-th

Note : Hb ... Haemoglobin.
HbF ... Foetal haemoglobin.
R E cells ... Reticuloendothelial cells.
HbE-th ... Haemoglobin E Thalassaemia.
Hom-th ... Homozygous Thalassaemia
P.M. ... Post mortem.

TABLE 1—*contd.*

Sl. No.	Name of the patient, Age, Sex, Hb.	Weight of spleen (g.)	Capsule	Trabeculae	Congestion and dilatation of sinuses	Red pulp	Haemopoietic activity	Erythrophagocytosis	Malpighian follicles	Haemosiderin pigment	Haemosiderotic nodule	Diagnosis
22.	M., 8 yrs. Fch. Hb—6·0g. HbF—8·8%	240	Slightly thickened	Prominent	Moderate	Hyperplasia of R E cells with slight increase of fibrous tissue element—moderate no. of foam cells	Moderate. Erythroid activity predominant. Eosinophilic myelocytes—fair no. Megakaryocytes—nil	Nil	Slightly attenuated	Fair amount	Present	HbE-th
23.	A.M., 7½ yrs. Mch. Hb—3·48 g. HbF—22·29%	190	Slightly thickened	Moderately prominent	Very marked	Hyperplasia of R E cells, large no. of foam cells	Slight. Mainly erythroid. Magakaryocytes—moderate no.	Present in fair number	Mostly normal looking, a few attenuated	Fair amount	Present	HbE-th
24.	P.G., 16 yrs. Male. Hb—6·2 g. HbF—18 20%	420	Moderately thickened perisplenitis	Moderately prominent	Moderate	Hyperplasia of R E cells, a few foam cells	Very marked. Erythroid and myeloid cell reaction—similar. Eosinophilic myelocytes—fair no. Megakaryocytes—moderate no.	Present a few	Small in number either normal looking or atrophic	Scanty	Nil	HbE-th
25.	S.R., 5 yrs. Fch. Hb—7 g. HbF—60%	173	Slightly thickened	Prominent	Very marked	Hyperplasia of R E cells, a few foam cells	Slight. Mainly normoblasts. Megakaryocytes—nil	Nil	Normal looking	Scanty	Nil	Hom-th
26.	N.M., 6 yrs. Mch. Hb—4·3 g. HbF—6% after splenectomy	210	Normal	Normal	Moderate	Slight hyperplasia. A few foam cells	Moderate. Erythroid and myeloid cell reactions — similar. Megakaryocytes—moderate no.	Present a few	Reacting follicles (Haemorrhage round the follicle)	Fair amount	Nil	HbE-th
27.	S.N., 24 yrs. Male. Hb—5·5 g. HbF—32·8%	1100	Moderately thickened	Moderately prominent	Very marked	Hyperplasia of R E cells, foam cells—large no.	Slight. Mainly erythroid. Megakaryocytes—nil	Present a few	Slight atrophy	Nil	Nil	HbE-th
28.	B.K.D., 19 yrs. Male. Hb—5·5 g. HbF—30%	1285	Moderately thickened	Prominent	Moderate	Hyperplasia of R E cells, a few foam cells	Moderate. Erythroid, myeloid reaction—similar. Megakaryocytes—a moderate no.	A few	Attenuated	Nil	Nil	HbE-th
29.	R.M., 6 yrs. Mch. Hb—4·3 g. HbF—30%.	350	Slightly thickened	Slightly prominent	Moderate	Hyperplasia of R E cells. Foam cells—absent	Moderate. Erythroid activity predominant. Megakaryocytes—moderate no.	Nil	Atrophy	Present	Present	HbE-th
30.	K.M., 30 yrs. F. Hb—8·4 g. HbF—38%	785	Moderately thickened perisplenitis	Prominent	Very marked	Hyperplasia of R E cells. Foam cells—moderate no.	Slight. Predominant erythropoietic activity, megakaryocytes—a moderate no.	Present, in fair no.	Widely separated and hyperactive	Fair amount	Nil	HbE-th

Note: Hb ... Haemoglobin.
HbF ... Foetal haemoglobin.
R E cells ... Reticuloendothelial cells.
HbE-th ... Haemoglobin E Thalassaemia.
Hom-th ... Homozygous Thalassaemia.
P.M. ... Post mortem.

TABLE 2

Age in years	6/12—5	6—10	11—15	16—20	21—25
Number of cases	9	12	1	3	5
Average weight of the spleen in g.	227·5	397·2	1027	891·6	779

The haemoglobin values prior to splenectomy in this series of cases are shown below :

Hb. g/100 ml.	2·0-3·0	3·1-4·0	4·1-5·0	5·1-6·0	6·1-7·0	7·1-9·5
No. of cases	3	5	8	6	5	3

THE MACROSCOPIC APPEARANCE OF THE SPLEEN :

The spleen was enlarged and firm in all the cases ; it could, however, be cut without any marked sense of resistance. The capsule was found thickened in all cases excepting in one (Case 26). Evidence of perisplenitis was observed in four cases (Cases 16, 21, 24, and 30). The cut surface of the spleen was dark red in colour and very prominent trabeculae were seen in most of the cases. The white pulp was usually not prominent to the naked eye. One of the cases (Case 28) showed a circumscribed tumour-like area in the splenic substance.

HISTOLOGICAL CHANGES :

Capsule and trabeculae—The capsule showed moderate thickening in eight specimens while it appeared slightly thickened in the rest. The trabeculae were thick and prominent in twenty specimens.

Red pulp—In all the cases the splenic sinuses showed variable degree of congestion and dilatation. The degree of congestion in different cases was classed as follows. It was very marked (Fig. 1, *vide* Plate) in six and moderate in nineteen specimens ; the remaining five showed only slight congestion and dilatation. The red pulp of all the spleens showed hyperplasia of the cells of the reticulo-endothelial system. Moderate to large number of foam cells in big clumps (Whipple and Bradford, 1932, 1936) were observed in ten cases (Fig. 2, *vide* Plate) whereas a small number was noted in seventeen cases either singly or in small clumps. In three cases, however, these cells were not found. The foam cells were polygonal, round or oval in shape with pale eosinophilic foamy cytoplasm. The nucleus was vesicular and usually eccentrically placed. The average dimension of these cells was 18·5 × 13·1 μ. The biggest size of this cell was 35·2 × 24·0 μ and the smallest was 9·6 × 8·0 μ. The histochemical study showed that cytoplasm of the foam cells was rich in PAS-positive material. The spleen being very pleomorphic in cellular structure, the presence of a few foam cells was not easily observed in the sections stained with haematoxylin and eosin. With the periodic acid-Schiff method these cells, however, were easily demonstrable due to prominent red staining of the cytoplasm of the cells.

The red pulp also showed extramedullary haemopoietic activity (Fig. 3, *vide* Plate) as indicated by the presence of erythroid, myeloid and megakaryocytic cells in the sinuses. Haemopoietic activity was graded as, marked, moderate and slight, depending on whether the haemopoietic foci were respectively numerous, moderate or few in number. In our series, haemopoietic activity was marked in six, moderate in twelve and slight in the rest. The features of haemiopoiesis in these cases were as follows :

A predominating erythroid activity was noted in eighteen cases. In the remaining 12 cases, the erythroid and myeloid activity were of more or less similar degree. A large number of megakaryocytes was found in one case (Case 13) while fourteen cases showed presence of megakaryocytes in moderate numbers. In fifteen cases the megakaryocytes were rare or not found at all.

It will be seen from Table 4 that the degree of haemopoietic activity noted in the spleen was not related in any way to either the degree of anaemia, the splenomegaly, or the proportion of foetal haemoglobin.

Large macrophage cells containing ingested red blood cells were observed (Fig. 4, *vide* Plate) in moderate number in three cases while a small number of these cells was found in thirteen. Erythrophagocytes were not observed in the remaining fifteen cases. Haemosiderin pigment was noted in moderate amount in four cases and in small amounts in sixteen ; in the rest haemosiderin pigment was not seen.

Another histological feature was the presence of haemosiderotic nodule (Fig. 5, *vide* Plate) in seven out of thirty cases in our series. These nodules had typical features, viz., haemorrhage around a small blood vessel, deposition of haemosiderin, fibrosis, collection of histiocytes, some lymphocytes and fibroblasts.

The appearance of malpighian corpuscles was variable. They appeared hyperactive in four, normal in nine and attenuated in seventeen. In Case 26 a zone of haemorrhage was found around the follicles.

In one of our specimens from an adult patient, sarcoid-like nodules were seen in the spleen and in the liver.

In all the cases an increase of reticulin fibres was noted with variable degree of condensation.

Discussion

Splenic enlargement to the magnitude of 4 to 7 times the normal weight was noted in these cases. The splenic capsule was very frequently thickened and the trabecular tissue prominent. The changes in the supporting structures, viz., the capsule, the trabeculae and the reticulum, could usually be correlated with the degree of splenomegaly. Perisplenitis was infrequent and infarction not seen in the present series. Baty *et al* (1932) had, however, found perisplenitis to be common in their series of six cases.

Lymphoid follicles were usually few and far between. There was attenuation of lymphoid follicles in the majority of cases and in a few it was difficult to find any normal-sized follicles. The atrophy of lymphoid follicles was obviously due to hyperplasia of the red pulp. In a few cases, however, we found hyperactive germinal centre in the malpighian corpuscles which were not large in number.

Pathological changes in the spleen as noted by us indicate that splenomegaly in thalassaemia is essentially due to a combination of three factors, viz., (*a*) congestion of greatly increased and dilated vascular bed, (*b*) hyperplasia of reticulo-endothelial cells and (*c*) extramedullary haemopoiesis in the organ.

Vascular congestion persisting for long periods had in a small number of cases led to periarterial haemorrhage and formation of haemosiderotic nodule. This factor was probably also responsible for the haemorrhage around the Malpighian corpuscle noted in one case (Case 26) in our series.

The pathogenetic mechanism responsible for vascular congestion and reticulo-endothelial hyperplasia as noted in the enlarged spleen of thalassaemia syndrome may now be considered with reference to the present concept of the disorder. It is generally agreed that in thalassaemia, the fundamental anomaly is a hereditary defect in the synthesis of normal adult haemoglobin (Hb.A). A large amount of foetal haemoglobin (Hb.F) is usually present. In homozygous thalassaemia, no abnormal haemoglobin is present, though Hb.A_2 content is increased. In Hb.E-thalassaemia disease, Hb.A is replaced mostly, if not wholly, by Hb.E. The end result is disturbed erythropoiesis releasing a large number of malformed cells which have a short life-span. Haemolysis in this disease is not only reticulo-endothelial but intravascular as well. In some cases there may be associated extracorpuscular factors of hypersplenism or auto-immune haemolysis (Lichtman *et al*, 1953 ; Das Gupta, Chatterjea and Ray, 1954). A large number of these malformed red cells are presumably destroyed in the spleen. This would entail a considerable amount of work hyperplasia of reticulo-endothelial cells in red pulp of the spleen. This hyperplasia is associated with laying down of newer vascular channels for nourishment of the cells and production of connective tissue framework. The latter leads to decrease of rhythmic contraction of the spleen and thus to stasis of blood in the enormously increased vascular bed in the organ. The combination of marked reticulo-endothelial hyperplasia, enormously increased vascular bed and stasis in the sinuses may occasionally lead to secondary hypersplenism.

Thalassaemia is associated with widespread and/or increased haemopoietic activity in the bones and in many extramedullary sites. Foci of haemopoietic cells noted in the spleen in these cases represent extramedullary haemopoiesis which may be a part of the compensatory mechanism set up for combating anaemia consequent on dyshaemopoiesis and hyperhaemolysis. Alternatively, it may be the manifestation of the same common anomaly which interfering with the synthesis of haemoglobin may lead to marked proliferation of myeloid elements in the bone marrow, spleen and elsewhere in the system.

In thalassaemia, there is increased destruction of red cells. An iron containing pigment is reported to be abundant in a number of organs, viz., liver, pancreas, lymph glands, etc. The spleen, however, usually does not contain much of haemosiderin (Wintrobe, 1956). In our series, we could find a small amount of haemosiderin in sixteen cases and a moderate amount in four. It is known that increase of haemosiderin may be seen in cases that had repeated blood transfusion previous to splenectomy (Dacie, 1954). Blood transfusions were apparently responsible for the presence of haemosiderin in the majority of our cases.

The presence of foam cell in the spleen was recorded in two cases of thalassaemia by Whipple and Bradford (1932) ; such cells were noted in the bone marrow also. These cells give a very faint pink colour with fat stains (Wintrobe, *loc. cit*). Our histochemical studies have indicated that these cells are very rich in PAS-positive material that is an acidic mucopolysaccharide (Sen Gupta *et al*, 1959).

Finally the question of specificity or otherwise of the pathological changes in the spleen in thalass-

Fig. 1—Spleen showing marked congestion and dilatation of the sinuses (× 220).

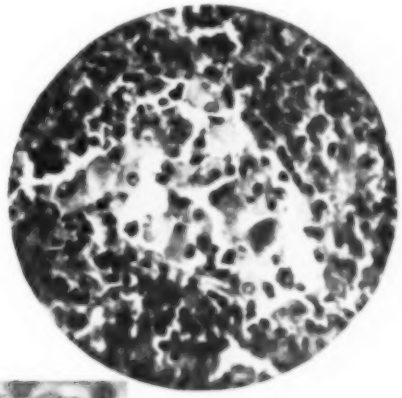

Fig. 2—Large number of 'foam cells' in the splenic sinus (*ca.* × 220).

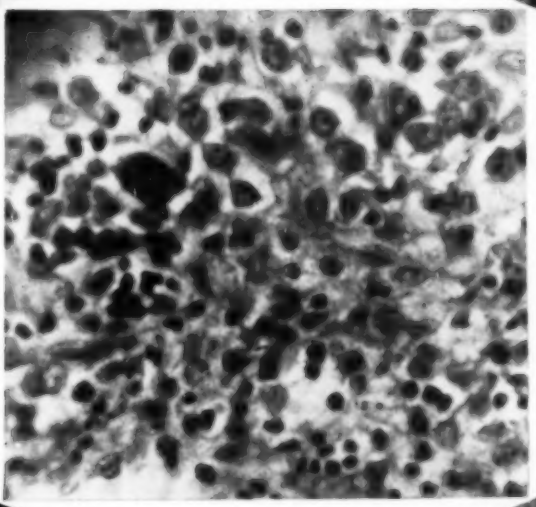

Fig. 3—Haemopoietic foci in the spleen (× 220).

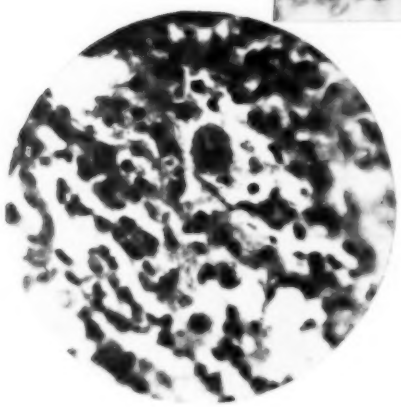

Fig. 4—Erythrophagocytic cell in the splenic sinus (× 220).

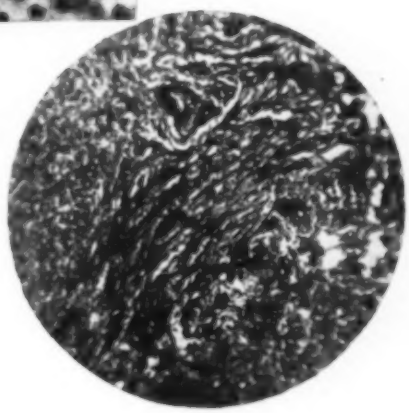

Fig. 5—Haemosiderotic nodule in the spleen (× 67).

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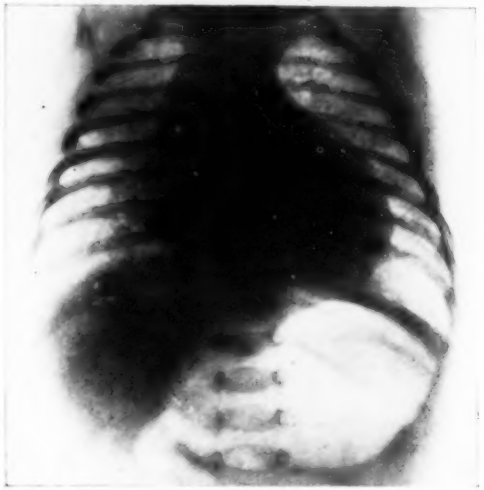

Fig. 1—Postero-anterior skiagram of the chest showing suggestion of generalised bronchitis, bronchiolitis and bronchopneumonia and cardiac enlargement (Case 2)

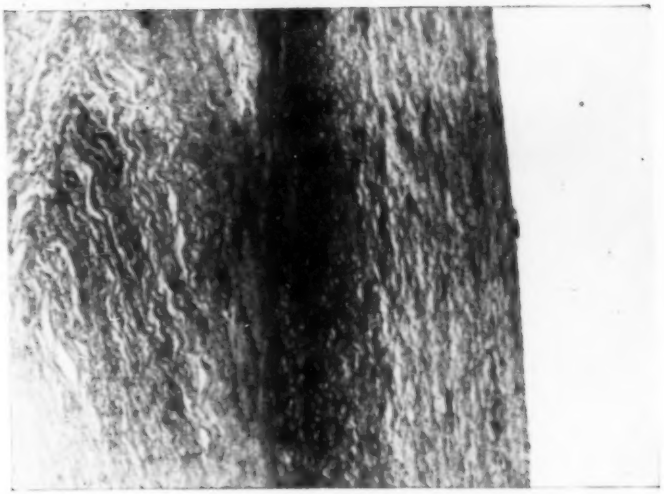

Fig. 2—Photomicrograph showing marked fibro-elastic thickening of the endocardium of the left ventricle (Case 2). (Weigart's Elastic Tissue ×95).

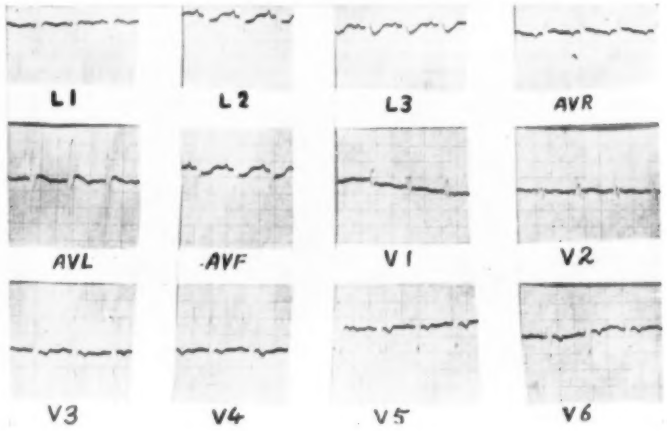

Fig. 3—Electrocardiogram suggesting probable myocardial changes. Sinus rhythm; rate, 125; P-R interval, 0·13; and QRS, 0·08 (Case 3).

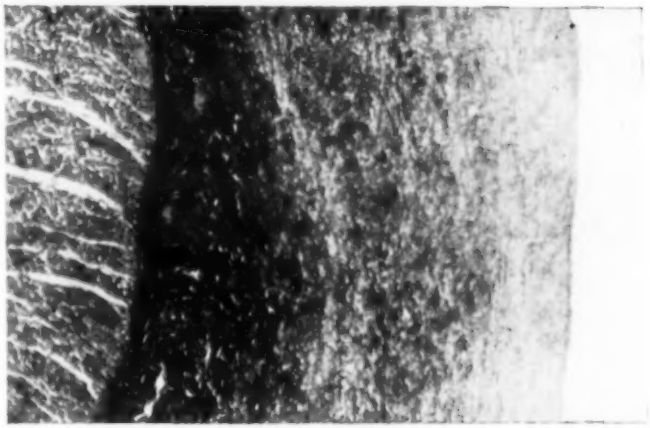

Fig. 4—Photomicrograph showing marked fibro-elastic proliferation of the endocardium of the left ventricle. Myocardium appears normal (Case 3). (Weigart's Elastic Tissue ×95).

aemia may be considered. The principal pathological changes noted in this condition are: splenomegaly, congestion of increased vascular bed, reticulo-endothelial hyperplasia, foci of haemopoiesis, atrophy of malpighian corpuscles, presence of haemosiderotic nodules and increase of connective tissue. All those changes singly or in combination may occur in many conditions other than thalassaemia. Similar changes of varying degree have been reported in hereditary spherocytosis, acquired haemolytic anaemia and in other hypersplenic conditions. Extramedullary haemopoiesis of marked degree as observed in 6 cases was rather remarkable. But haemopoietic foci were relatively few in a fair proportion of cases of thalassaemia; therefore the differentiation based on the quantitation of haemopoietic foci is not satisfactory. The presence of 'foam cells' rich in acidic mucopolysaccharides, however, has not been observed in various splenomegalic conditions studied by us (Sen Gupta *et al*, 1959).

Summary

Pathological examination of thirty specimens of spleen from the cases of thalassaemia has shown the following changes:

The weight of the spleen was increased to the extent of 4 to 7 times the normal. The splenic capsule was frequently thickened and the trabeculae prominent. The degree of splenomegaly usually determined the changes in the supporting structures, viz., the capsule, the trabeculae and the reticulum.

There was attenuation of the lymphoid follicle in the majority of the cases.

Splenomegaly was essentially due to (*a*) congestion of the greatly increased and dilated vascular bed in the organ, (*b*) hyperplasia of the reticuloendothelial cells and (*c*) extramedullary haemopoiesis. In the majority of cases there were many foci of haemopoietic tissue in the red pulp.

The other findings of interest were the presence of (*a*) haemorrhage around the malpighian follicles in one case, (*b*) small amount of haemosiderin granules in 16 cases and haemosiderotic nodules in 7 cases, (*c*) presence of foam cells in big or small clumps in 27 cases, and (*d*) sarcoid-like lesions in the spleen and the liver in one case.

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PRIMARY ENDOCARDIAL FIBRO-ELASTOSIS

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Endocardial fibro-elastosis is not as rare a disease entity as has heretofore been thought. It has been described under different terms in the past, such as 'foetal endocarditis', 'endocardial sclerosis' and 'endomyocardial fibrosis'. It is found usually in infants and young children but is uncommon in adults. The chief importance of endocardial fibro-elastosis is its high mortality.

The lesion has been found to be one of the important causes of heart failure and death in children with heart disease, between the ages of two months and one year. Kelly and Andersen (1956) collected 79 cases of congenital endocardial fibro-elastosis from the literature and added 17 of their own in a 20-year period. Keith *et al* (1958) found 20 instances among 500 cases of congenital heart disease coming to postmortem and 14 instances among 950 cases of congenital heart disease diagnosed clinically.

The lesion is characterised by a diffuse thickening of the mural endocardium, which appears as a thick, gray or pearly-white, usually smooth layer lining the involved chamber of the heart. This process may involve the papillary muscles, chordae tendineae or even the valvular endocardium, producing deformities, usually of aortic and mitral valves. Frequently inolved chambers are, the left ventricle and the left atrium. A concomittant involvement of the right side of the heart was found in 16 per cent of the cases of endocardial fibroelastosis, reviewed by Dennis *et al* (1953) and 5 of 17 cases reported by Kelly and Andersen (1956). Microscopically, there is extreme proliferation of the fibrous and elastic tissue of the endocardium. Few degenerating muscle fibres may be seen at the subendocardial-myocardial junction, otherwise the muscle fibres are unremarkable except for hypertrophy and occasionally small areas of fibrosis, necrosis or calcification. Rosahn (1955), in his 4 cases, found spotty and segmental periarterial hyperelastosis in the medium-sized and small branches of the coronary arteries and also of other organs. DeMuth and Landing (1955) described medial hypertrophy and focal intimal fibrosis of the muscular and musculo-elastic arteries of the heart and of other organs. However, such changes were very infrequent and not described by others.

Endocardial fibro-elastosis is classified into primary and secondary groups. In the secondary group the endocardial lesion results as a sequel to an associated major congenital cardiac anomaly. Mechanical factors, including increased pressure and abnormal currents of intracardiac blood, are of importance in the production of endocardial fibroelastosis (Andersen and Kelly, 1956). Endocardial fibro-elastosis was found in 60 per cent of the cases of aortic atresia and 4 per cent of coarctation of the aorta (Keith *et al*, 1958). In the primary group, endocardial lession is not associated with any major congenital cardiac anomaly. The aortic or the mitral valves may be involved secondarily. The primary group is subdivided (Edwards, 1953) into: (1) the dilated type, the commonest form, characterised by hypertrophy and dilatation of the left ventricle ; and (2) the contracted type (constricted endocardial sclerosis) which is rare and characterised by a normal or a contracted smaller left ventricle and secondary dilatation and hypertrophy of the right ventricle. In such cases the lung picture resembles that of mitral stenosis.

The mechanism of cardiac failure occurring in endocardial fibro-elastosis is that the splinting action of the thick fibro-elastic layer which interferes with systolic contraction and diastolic filling somewhat similar to the limitation of the cardiac action in constrictive pericarditis (Prior and Wyat, 1950). This appears to hold well for the rare contracted type (Edwards, 1953), but Lambert and Vlad (1958) believe that such a mechanism is unlikely with the common type of left-sided heart involvement, as evidenced by the angiocardiogram and cardiac catheterisation (Linde *et al*, 1958 ; Prec and Cassels, 1952), though limited to small number of proved cases. It appears doubtful that there is a limitation of diastolic filling.

In the recent years, cases in adults, showing pathologic pattern resembling the primary endocardial fibro-elastosis, have been reported from Africa (Davies and Ball, 1955), Europe, Ceylon (Nagaratnam and Dissayake, 1959), and North America, including the North American Indians (Edwards and Hanson, 1959). It is difficult to presume that occurrence of this lesion in adults represents the persistence of the congenital anomaly (Thomas *et al*, 1954), or is an entity acquired during adulthood (Lynch *et al*, 1957 ; Nadas, 1957). In adults, the process is predominantly fibrotic rather than elastic and seems to spare the septal surface of the ventricles. Myocardial fibrosis is marked with fibrous septa extending into the myocardium (Lynch and Watt, 1957).

The actiology of the disease is obscure. Several theories have been propounded as follows: (1) inflammatory factors acting during foetal life (Farber and Hubbard, 1933), but this hypothesis was opposed (Gross, 1941 ; Campbelll, 1949), (2) congenital developmental defect of the endocardium itself (Gross, 1941 ; Weinberg and Himelfarb, 1943) ; (3) collagen disease as a result of hypersensitivity (Hill and Reilly, 1951), or with congenital, acute lupus erythematosis (Hogg, 1957) ; deposition of fibrin on the endocardium has been observed by electron microscopy by Still and Boult (1957) ; (4) anoxia of the endocardium (Johnson, 1952), due to premature closure of the foramen ovale, but the theory is invalidated because the foramen is open in many cases (Kelly and Andersen, 1956 ; Lambert, 1955) ; (5) genetically determined generalised

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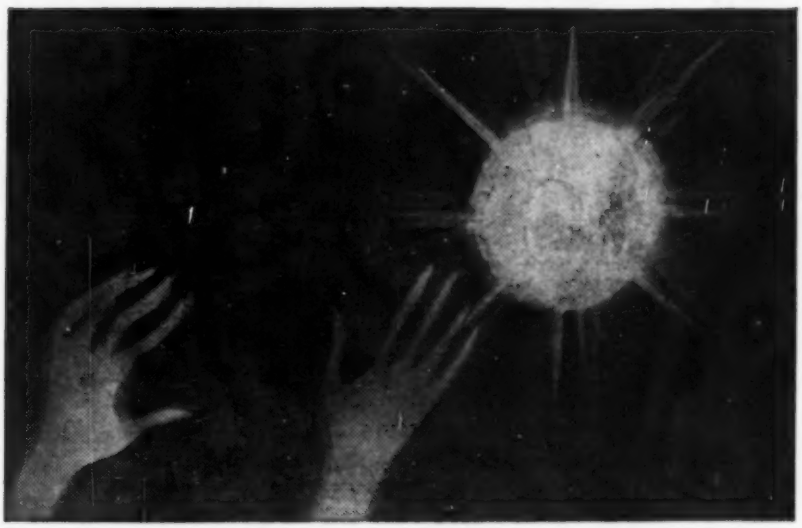

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arterial disease (Rosahn, 1955) ; (6) familial metabolic defect of the myocardium resulting from the deficiency or abnormality of an enzyme system (Kelly and Andersen, 1956) ; (7) congenital hyperplasia of the myocardium (Black-Schaffer, 1957).

The electrocardiographic findings (Vlad *et al*, 1955) present wide range of variation and is not pathognomonic for the disease. However, it facilitates the diagnosis. Pure left ventricular hypertrophy occurs in a majority of cases of dilated type, and specially in those with a fulminating or an acute clinical course. Pure right ventricular hypertrophy is seen in the case with the contracted type and in those cases of the dilated type in which both sides of the heart are involved. Combined ventricular hypertrophy may be present in patients with the dilated type and a chronic course. The electrocardiogram is affected by several factors, such as anatomical type of the heart (Lambert and Vlad, 1958), chamber involvement (Metianu *et al*, 1954), course of the disease, presence of cardiac failure, and massive fluid retention (Vlad *et al*, 1955). A pattern of myocardial infarction was recorded in a 13-month old child with necrosis of the left ventricle without evidence of coronary artery disease (Lambert and Vlad, 1958), and in a 15-year old boy (Auld and Watson, 1957). A small myocardial infarct was found in a 49-year-old patient (Knight, 1958). Other uncommon electrocardiographic findings include rhythm disturbances and conduction defects, such as prolonged P-R interval, A.V. dissociation, Wolff-Parkinson-White syndrome and left bundle branch block. A complete heart block may be interpreted as foetal distress (Devitt and Pinto, 1957).

To illustrate the clinicopathological picture of endocardial fibro-elastosis, the following 3 cases, of French Canadian infants, observed in the Ottawa General Hospital, are presented.

Case Reports

Case 1—G. S., a 4-month-old female infant, was admitted because of difficulty in breathing, cough, cyanosis and fever of one day's duration. There was no vomiting or diarrhoea. She had a similar attack two weeks earlier from which she had apparently recovered. She was delivered normally at full term. The parents had no consanguinity.

On examination the infant was of average build and had marked respiratory distress, grunting, and cyanosis of the face and extremities. The temperature was 103·4°F (rectal). There were signs suggestive of bilateral bronchopneumonia with heart failure.

Despite the heavy doses of antibiotics, digoxin, and symptomatic therapy, she expired 35 minutes after admission.

Autopsy—At autopsy, the heart weighed 60 g. There was moderate degree of hypertrophy and dilatation of the left ventricle which measured 0·7 cm. in thickness whereas the right ventricle measured 0·2 cm. in thickness. The endocardium of the left ventricle was of pale grayish-yellow colour with a dull lustre and on sectioning measured approximately 1·5 mm. in thickness. In other chambers, the endocardium was unremarkable. The chordae tendineae of the left venricle appeared slightly thickened and rigid. The microscopic examination revealed fibro-elastic proliferation of the endocardium, subendocardial myofibrosis and hypertrophy of the myocardium. Other associated findings were : presence of interstitial bronchopneumonia; fatty infiltration of the liver ; petechiae of the thymus, pleura and liver; and hyperkeratosis of the skin.

Case 2—C. R., a 3-month-old male infant, was admitted because of a running nose for the last one week and later development of a mild fever and occasional cough with difficulty in breathing. The appetite was poor for 2 days. The mother observed that the infant, during the last 1 day, had few spells of cyanosis and choking followed by drowsiness, cold and clamminess of the limbs, and sweating. He did not vomit nor had convulsions. He was born at full term after a normal delivery, and the parents had no consanguinity.

Examination revealed an average built cyanotic, dyspnoeic, and extremely ill infant. The temperature was 97·6°F (rectal); the pulse rate was 180 per minute and the respiration rate 80 per minute. The face was slightly puffy and the legs were slightly oedematous. The liver was palpable 3 fingers below and the spleen 1 finger below the costal margins. The chest was dull on percussion with diminished air entry over both the infrascapular regions and was full of medium to fine rales on both sides.

Skiagram—The skiagram of the chest revealed evidence of generalised bronchitis, bronchiolitis and bronchopneumonia and enlargement of the heart (Fig. 1, *vide* Plate). Despite large doses of antibiotics, steroids and digoxin, in addition to other supportive therapy, the patient died 7 hours after admission.

Autopsy—At autopsy, the pericardial cavity contained 10 c.c. of straw-coloured fluid. The heart weighed 56 g. The right and left ventricles measured 0·3 and 0·7 cm. in thickness, respectively. The myocardium appeared grossly unremarkable. The foramen ovale was nonfunctional and ductus arteriosus was closed. The endocardium in the left ventricle appeared whitish, opaque, and thicker than the other chambers of the heart. Microscopic examination revealed fibro-elastic thickening of the endocardium (Fig. 2, *vide* Plate). Other associated findings were : bilateral hydrothorax (30 c.c.); focal interstitial pneumonia; oedema and congestion of lungs; minimal laryngitis; and petechial haemorrhage of thymus, epicardium, and visceral pleurae.

Case 3—M. T., a 2½-month-old male infant, was admitted because of occasional vomiting since birth; and a running nose, sneezing, cough, and difficulty in breathing for 2 days. He was delivered by a caesarian section at the gestation of 38 weeks, weighing 9 lb. 11 oz. The parents had no consanguinity.

Examination revealed an average built, non-cyanotic, dyspnoeic but active infant with temperature of 100°F (rectal). He had eczematoid type dermatitis over the face; and bilateral scattered sibilant rhonchi in the chest, with expiratory wheezing. No heart murmurs were audible and there were no gross signs of cardiac failure. Uncomplicated umbilical hernia and undescended testes were observed.

Laboratory investigations—There was a faint trace of albumin in urine. W.B.C. count was 9,800 per c.mm. with 17 per cent polymorphonuclear cells and 83 per cent lymphocytes. The haemoglobin was 10·8 g. per cent.

Skiagram—The skiagram of the chest revealed evidence of partial collapse of the right upper lobe and emphysema of the right lower and middle lobes. The size of the heart was apparently within normal limits.

Treatment—The patient was treated as a case of asthmatic bronchitis with antibiotics and bronchodilators in addition to other supportive therapy but the clinical response was very poor. On the 3rd hospital day, frank signs of heart failure appeared in the form of puffiness of the face, spells of cyanosis, increased dyspnoea, tachycardia (heart rate 180 per minute) and hepatosplenomegaly. The temperature went as high as 105°F (rectal), producing febrile twitchings of the muscles. Later, signs of shock also appeared. He was digitalised and antibiotics were reinforced. Sedatives, cardiorespiratory stimulants and steroids were prescribed in addition to the antipyretic therapy. In about 2 days the condition greatly improved and remained under control for 4 days when he had a relapse of the signs of bronchial spasm and increase in the degree of heart failure. An electrocardiogram at this stage suggested probable myocardial changes (Fig. 3, *vide* Plate). He ran a downhill course and developed marked distension and tympanitis and had frequent spells of cyanosis. The heart rate and respirations became irregular and finally he went into respiratory standstill and became deeply cyanosed. On auscultation occasional heart beats were audible. After giving an immediate intracardiac injection of cardiorespiratory stimulant, followed by artificial respiration, he was successfully resuscitated and revived. However, his condition remained critical for 4 days but later it gradually improved. He was discharged after about a month of hospitalisation. It was very difficult to assess whether he suffered any brain damage due to the prolonged cyanosis.

Follow-up—After 4 days of the discharge from the hospital, he was again admitted for 2 weeks because of vomiting and wheezing. At the age of 11 months, he was again hospitalised for 2 weeks, because of similar complaints of a week's duration. There were signs of bronchial spasm without cardiac failure. He was allergic to several things, such as: meat, cereals, bread, orange juice, egg, fur, wool, feather, perfume and talcum powder. There was no eosinophilia.

He was admitted again, for the fourth time, at the age of 13 months, because of repeated attacks of breathlessness and cyanosis of 4 days' duration. On admission the temperature was 105·6°F (rectal), heart rate was more than 200 per minute and respirations about 80 per minute. He appeared moribund, pale, puffy, cyanotic and in shock. Signs of severe bronchial spasm, gallop rhythm, and frank heart failure were present. A diagnosis of endocardial fibro-elastosis was presumed clinically. Despite an intensive therapy with digoxin, antibiotics and other supportive therapy, he expired 5 hours after the admission.

Autopsy—At autopsy, the heart was enlarged and weighed 60 g. The right and left ventricles measured 0·3 and 1·0 cm., respectively, in thickness, indicating a hypertrophy of the left ventricle. The myocardium appeared normal. The foramen ovale was closed. The endocardium was smooth, shiny and opaque, particularly in the left ventricle. On microscopic examination the endocardium exhibited marked fibro-elastic thickening (Fig. 4, *vide* Plate). The tricuspid, pulmonic mitral and aortic orifices were of normal circumference. Aortic valve was bicuspid. Other associated findings were: patchy atelectasis of the lungs, marked chronic bronchitis and emphysema; fatty change in the liver cells; heterotopic splenic tissue in pancreas; undescended testes; and oedema of the brain and the peritibial and sacral subcutaneous tissues.

Comment

In these cases, there was no history suggestive of familial incidence. No associated major congenital cardiac malformation was found, therefore, they all belonged to the group of primary endocardial fibro-elastosis. The endocardial involvement was most marked in the dilated and hypertrophied left ventricle.

In cases of primary endocardial fibro-elastosis the chief signs and symptoms are related to various stages of heart failure. There have been three clinical types distinguished by the age of onset and severity of symptoms and signs. These have been classified as (1) fulminating, (2) acute, and (3) chronic types. Dennis *et al* (1953) reviewed the literature and found that the fulminating type comprised 25 per cent of the total and occurred in infants under 6 weeks of age who were apparently normal previously. The onset is usually abrupt with dysproea and signs of shock, leading to early death, usually within a few hours. The acute type occurred in 51 per cent of the total and was found mainly in infants of 6 weeks to 6 months of age. The onset is slower, usually with dyspnoea followed by cough and wheezing, irritability and anorexia. The respiratory distress builds up over a period of a few days to two weeks, leading to death, usually within a few hours. The acute type was found in 24 per cent of the total and mostly occurred in babies over 7 months of age. Such infants appear normal till several months; then dyspnoea, cough or wheezing, and intermittent cyanosis sets in. The heart is usually enlarged and globular, and the heart sounds are often diminished. Usually there is no heart murmur, or only

a faint one is heard. Secondary valvular involvement may produce murmurs. Frank signs of heart failure are usually found. Gallop rhythm occurred in 80 per cent of cases with cardiac failure (Keith *et al*, 1958). Death usually ensues after a few weeks or months or occasionally after a few years.

Among the present cases, in Cases 1 and 2, although the symptoms manifested many days earlier, the terminal course was fairly quick despite therapy with digitalis. In Case 3, there were several episodes of respiratory infections followed by wheezing and signs of bronchopneumonia and heart failure. It was observed that he was very prone to develop cardiac failure after an attack of bronchitis in contrast to other children, of the same age group in the wards, with more severe bronchitis but witihout heart failure. Digoxin was very helpful in prolonging the course. Cases 1 and 2 belonged to the acute type whereas Case 3 belonged to the chronic type of the disease. The association of strong allergy, in Case 3, to several materials, makes one to think whether the phenomenon of allergy or hypersensitivity played any role as a factor in the causation of endocardial fibro-elastosis.

In cases of secondary endocardial fibro-elastosis, the diagnosis is usually impossible or very difficult before autopsy. However, in presence of aortic atresia or coarctation of the aorta one can suspect a possibility of endocardial fibro-elastosis. In cases of primary endocardial fibro-elastosis, the diagnosis is possible clinically. In Case 3, the diagnosis of endocardial fibro-elastosis was presumed clinically and confirmed at autopsy. It is, therefore, of paramount importance to recognise the lesion as early as possible. The differential diagnosis includes consideration of most of the conditions which produce left ventricular hypertrophy at that age, such as: coarctation of the aorta, patent ductus arteriosus, tricuspid atresia, atrial septal defect, aortic stenosis, anomalous origin of the left coronary artery ; lesions, such as myocarditis and rare conditions like pericardial effusion, coronary calcinosis, vitamin deficiencies, rhabdomyoma, glycogen storage disease and idiopathic cardiac hypertrophy (Conway, 1949). Widespread tissue deposits of substance resembling glycogen was found in a case of endocardial fibro-elastosis (Caplan, 1958).

In adults, the disease usually manifests in third or fourth decades of life (Knight, 1958). It is characterised by absence of family history, a short course from the onset of congestive failure to death, usually a normal blood pressure, frequent presence of eosinophilia (Lynch and Watt, 1957), multiple embolic phenomena, marked cardiomegaly and electrocardiographic conduction defects. Calcification of the endocardium has rarely been reported (Van Buchem *et al*, 1959). The diagnosis can, however, be difficult clinically.

The sheet anchor of the treatment is the prompt control of heart failure and proper digitalisation. Oxygen, antibiotics and sedatives are useful. The important aspect of the treatment is the length of time digitalis should be given. This has not been finally settled, however, Keith *et al* (1958) recommend administration of digitalis for at least 2 to 3 years and then cautiously tapering it down. The dosage (maintenance dose) of digoxin is 0·006 mg. per pound body weight daily (Keith, 1959). Paul and Robins (1955) have reported the 4-year experience with pericardial poudrage, instillation of talc into the pericardial sac. They have had 9 cases with 4 deaths. This mortality does not indicate any improvement over the results obtained with digitalis alone. The prognosis has greatly improved with the proper treatment of cardiac failure and prolonged use of digitalis.

Summary

Primary endocardial fibro-elastosis is discussed, in the light of a brief review of the recent literature, and illustrated by the reports of three new cases, in infancy, proved at autopsy. In one of these, the diagnosis was presumed clinically: it was considered whether the phenomenon of allergy or hypersensitivity played any role in the causation of endocardial fibro-elastosis.

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ATYPICAL OSTEOMYELITIS FOLLOWING INADEQUATE ANTIBIOTIC THERAPY : ITS SIMILARITY WITH FIBROUS DYSPLASIA

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Introduction

It is known that some cases of pyogenic osteomyelitis demonstrate unusual clinical and radiological features following treatment by an antibiotic like penicillin.

The changed clinical features have been described by Compere *et al* (1943), Altemier and Holmsworth (1945), McAdams (1945), Agerholm and Trueta (1946), Higgins *et al* (1947) and Steindler (1952).

The radiological changes have been noted by Altemier and Reinecke (1945), Brailsford (1948), Nash (1951), and Meschan (1957). These changes are minimal bone necrosis with absence of sequestra and little new bone formation. Another marked feature is a lasting, slowly developing osteoporosis involving the diaphysis even after the disease is clinically quiescent (Gray *et al*, 1950) and leading to deformity and pathological fracture.

Cases of pyogenic osteomyelitis showing features resembling the localised type of fibrous dysplasia have not been recorded so far. The present report deals with four such cases.

Irregular and inadequate dosing by antiobiotics is often a common practice. This may lead to a grumbling infection in bone causing atypical changes which may resemble malignant bone tumours and other diseases of bone (Bose, 1959).

The patients were observed in the Orthopaedic Department of the Medical College, Calcutta, during the years 1957 and 1958. They were cases which created difficulties in diagnosis due to atypical clinical and radiographic features.

The clinical, radiological and histological findings are summarised in Table 1.

Discussion

The aetiology of fibrous dysplasia—a term popularised by Elmslie (1933, 1934) to embrace such diagnostic labels as osteitis fibrosa, fibrous defects and fibrocystic disease of bone—is unknown. Lichtenstein and Jaffe (1942) have described one type as non-osteogenic fibroma. Hatcher (1945) used the term 'metaphyseal fibrous defects' for localised lesions eccentrically placed in the

Fig 1—X-ray print showing expanded middle third of left tibia with osteolytic and cystic changes involving both cortex and medulla (Case 1).

Fig. 3—X-ray print showing expanded middle third of left femur with altered trabecular pattern, cystic changes and periosteal reaction (Case 2).

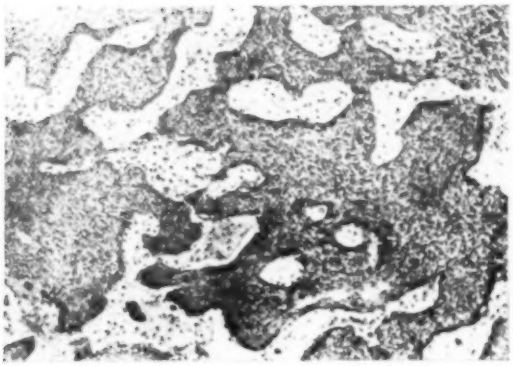

Fig. 2—Photomicrograph showing typical appearance of fibrous dysplasia (10 × 8) (Case 1).

Fig. 4—Photomicrograph showing appearance of fibrous dysplasia (10 × 8) (Case 2).

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Fig. 5—X-ray print showing expanded upper half of left tibia with altered trabecular pattern, periosteal reaction and a soft tissue shadow (Case 3).

Fig. 7—Skiagram showing cystic appearance of all bones of the tarsus (Case 4).

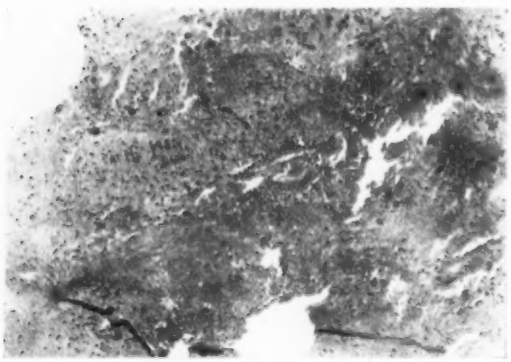

Fig. 6—Photomicrograph showing packed fibroblastic cellular pattern with islets of tissue suggestive of fibrous dysplasia (10 × 8) (Case 3).

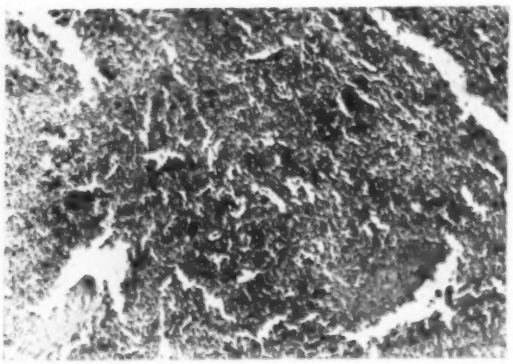

Fig. 8—Photomicrograph showing inflammatory picture with fibrosis (10 × 8) (Case 4).

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TABLE I—SHOWING ANALYSIS OF THE FOUR CASES UNDER REVIEW

Serial No.	Age (years)	Sex	Clinical features	Duration (months)	Total penicillin received (mega units)	X-ray	Biopsy	Culture	Treatment and results	Remarks
1.	3	M	Bony swelling with anterior bowing deformity	18	1·5	Fig. 1 (*vide* Plate)	Fig. 2 (*vide* Plate)	*Streptococcus viridans*	Curettage and general treatment. Marked improvement	Simulated fibrous dysplasia clinically, radiologically and even histologically
2.	12	F	Diffuse bony swelling middle third of left femur	12	3·5	Fig. 3 (*vide* Plate)	Fig. 4 (*vide* Plate)	*Bacillus faecalis alcaligenes*	Same treatment	—do—
3.	19	F	Swelling of left tibia upper half	8	0·6	Fig. 5 (*vide* Plate)	Fig. 6 (*vide* Plate)	Sterile	Immobilisation and general treatment	—do—
4	19	F	Deformed left foot with a small discharging sinus on outer border	24	6·0	Fig. 7 (*vide* Plate)	Fig 8 (*vide* Plate)	Not done	Physiotherapy and elastic bandage with general treatment	Simulated osteitis fibrosa and cystic type of tuberculosis

N.B.—In all cases the onset was with fever, and pain and swelling in the affected part.

metaphyses of long bones and composed of only cellular tissue with a chaotic pattern, showing no evidence of new bone formation (Cunningham and Ackermann, 1956). "It is perhaps wise to reserve the word fibrosis for the histological change and use the term fibrous dysplasia of bone for the condition as a whole", as aptly summarised by Jackson Burrows (1950).

Phemister (1929) described a type of 'chronic fibrous osteomyelitis', pursuing a chronic course from the onset in which a circumscribed area of bone is broken down by fibroblastic activity and the area is devoid of usual microscopic changes of pyogenic infection. The lesions, according to him, resembled the 'brown tumours' (Konjetzny, 1922 and Losser, 1924, both quoted by Phemister 1929), where the cavity in the bone was filled with fibrous tissue, greyish or brownish in colour. Microscopically these lesions showed fibroblasts, blood pigments, polyblasts and giant cells but there was no area of bone or cartilage formation. Culture from two of his cases showed *Staphylococcus aureus* and in five cases the cultures were sterile. There was no leucocytic or lymphocytic infiltration.

The cases recorded (Table 1) show how chronic osteomyelitis treated by penicillin may resemble the localised type of fibrous dysplasia. The striking feature of this investigation was that two of the cases showing typical histological and radiological features of fibrous dysplasia, revealed organisms like *Streptococcus viridans* (alpha haemolyticus) and *Bacillus faccalis alcaligenes*. Cultures in the third case were sterile. The packed fibroblastic cellular pattern lacked anaplasia which differentiates it from sarcoma as pointed out by Coventry and Dahlin (1957). There were islets of degenerating and regenerating bone in the fibrous area, characteristic of fibrous dysplasia.

The clinical features of these cases also simulated fibrous dysplasia in presenting bony deformity, swelling and an afebrile course.

The radiological features showed localised areas of altered trabecular pattern, cystic change and even a little expansion of bone, characteristic of fibrous dysplasia.

These observations suggest that infection might possibly be one factor in the aetiology and pathogenesis of true localised fibrous dysplasia but the evidence for such a theory is as yet incomplete.

SUMMARY

Records of four cases of chronic infective osteomyelitis following penicillin treatment are presented to illustrate the close similarity with fibrous dysplasia.

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DIHYDROERGOTAMINE IN THE TREATMENT OF MUMPS

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Following the successful use of dihydroergotamine (DHE) in the treatment of herpes zoster, Jobanputra (1955), on the assumption that the drug may possess antiviral action, demonstrated its efficacy in the treatment of mumps. A clinical trial was undertaken at this hospital to evaluate the efficacy of DHE in the treatment of this disease.

METHOD AND MATERIAL

For this purpose observations were made on the total of 50 such cases. Out of these, 25 served as controls and 25 were administered DHE —the latter had in addition the routine treatment consisting of a sodi salicylas mixture, stilboestrol tablet (1 mg.) daily for 5 days and local application of glycerin-belladonna to the parotid swelling. 'Controls' received only the routine treatment.

OBSERVATIONS

Sex and age incidence—The series included both sexes, the male comprising 41 cases and the female 9. Of the 41 males, 19 were in the control group and 22 in the DHE-treated and out of 9 females, 6 belonged to the control group and 3 to the DHE-treated.

The age incidence is shown in the Table 1.

TABLE 1—SHOWING AGE INCIDENCE

Age (years)	No. of cases	
	Control group	DHE-treated group
1—5	4	2
6—10	4	4
11—15	2	3
16—20	6	8
21—25	7	6
26—30	2	2

Duration of illness—Duration of illness from the onset at the time of admission varied from 1

to 7 days. Table 2 gives the breakdown of the series on this basis.

TABLE 2—SHOWING THE ANALYSIS OF THE CASES ACCORDING TO DURATION OF ILLNESS PREVIOUS TO ADMISSION

No. of days the patient had symptoms of the disease prior to admission	No of cases		
	'Control' group	DHE-treated group	Total
1	3	3	7
2	11	10	21
3	6	8	14
4	2	2	4
5	1	1	2
6	2	—	2
7	—	1	1

Dosage—The drug was used by intramuscular injection and the schedule of DHE employed was a single dose of 1 c.c.* administered on the first day of treatment for adults and 0·5 c.c. for children between 6-12 years. Proportionately smaller doses were employed for those below 6 years of age. It was repeated after 48 to 72 hours in 10 cases when there was no satisfactory response in regard to the reduction of the swelling of the parotids

Majority of the cases received treatment on the 2nd day of illness in both the groups (Table 2).

Evaluation of the treatment was based on the relief of the cardinal symptoms, viz., fever, pain in and swelling of the parotid gland which were present in all the cases under study.

TABLE 3—SHOWING ANALYSIS OF THE CASES IN RELATION TO THE DURATION OF FEVER PRIOR TO ADMISSION

Duration of fever prior to admission (days)	No. of cases	
	Control group	DHE-treated group
1 ...	2	4
2 ...	10	9
3 ...	4	7
4 ...	2	3
5 ...	2	1
6 ...	3	—

Both the series of cases had rise of temperature ranging between 99°F and 103°F, the average range being 100·7°F in the control group and 100·3°F in the DHE-treated group. Only 3 cases did not give the history of having any temperature—two in the control group and one in the DHE-treated group. Thus a total of 47 cases was studied to evaluate the effect on temperature. Of these 23 were among the control and 24 in DHE-treated groups (Table 3).

* 1 c.c. contains 1 mg. of DHE.

DHE was administered within the first 24 hours of admission and in some instances the temperature reached normal within this period. This class of patients have therefore been put under the caption 'Before 24 hours (*vide* Table 4). As mentioned before in a few cases there was no fever. Obviously relief in these cases could not be included for comparison. Hence they have been excluded. On this basis the effect on pyrexia was studied and the results observed are tabulated (Table 4).

TABLE 4—SHOWING DURATION OF FEVER BEFORE ADMISSION AND SUBSIDENCE OF TEMPERATURE AFTER TREATMENT AND NUMBER OF CASES

No. of days	No. of cases in control group showing		No. of cases with DHE showing	
	Duration of fever before admission	Subsidence of temperature after commencement of treatment	Duration of fever before admission	Subsidence of temperature after commencement of treatment
Before 24 hours	—	2	—	2
1	2	3	4	4
2	10	7	9	7
3	4	6	7	7
4	2	3	3	3
5	2	2	1	1
6	3	—	—	—
Total	23	23	24	24

It is evident from Tables 3 and 4 that the results in both the groups appear to be identical. However, the average period for the temperature to settle down to normal was 3·1 days in the control group and 2·5 days in the DHE-treated group.

Table 5 shows the different glands involved. Table 6 indicates the day of disappearance of parotid swelling completely, counting from the day of onset of the disease. Table 7 shows the day of disappearance of the parotid swelling counting from the day when the treatment began.

The average period for complete disappearance of the swelling from the commencement of treatment was 5·4 days in the control group and 4 days in the DHE-treated group. Apart from this, it was observed that practically every case showed a marked reduction in the size of the parotid swelling within 24 hours of DHE administration. Table 7 indicates that one-third of the cases with DHE responded with a complete subsidence of the swelling within 48 hours following treatment

in marked contradistinction to the control series where the great majority of cases showed a disappearance of the swelling around the third and fourth day of treatment.

As regards the disappearance of testicular swelling, unfortunately due to lack of co-operation on the part of the patients, no definite conclusion could be arrived at though it appeared that there was no appreciable effect of DHE in this respect as the average period for disappearance of the swelling in both the series (control and with DHE) was 4 days from commencement of the treatment.

Similar data were collected with regard to 'pain' in the parotid swelling (Table 8). Of the total number of cases observed, only 16 reported pain (7 in the control group and 9 in the DHE group).

TABLE 5—SHOWING ANALYSIS OF THE CASES IN RELATION TO THE SITE OF THE SWELLING

Sites of swelling on admission	No. of cases		
	Control group	DHE-treated group	Total
Right parotid ...	4	3	7
Left parotid ...	7	6	13
Both parotids ...	9	12	21
Both testes ...	1	—	1
Right parotid plus both testes (on 5th day) ...	1	—	1
Both parotids plus right testis ...	1	—	1
Both parotids plus left testis ...	1	1	2
Both parotids plus both testes ...	—	2	2
Both parotids plus submandibular ...	1	—	1
Other (?) cases ...	—	1	1
Total ...	25	25	50

TABLE 6—SHOWING THE DAY OF DISAPPEARANCE OF THE PAROTID SWELLING FROM THE DAY OF ONSET (44 CASES)

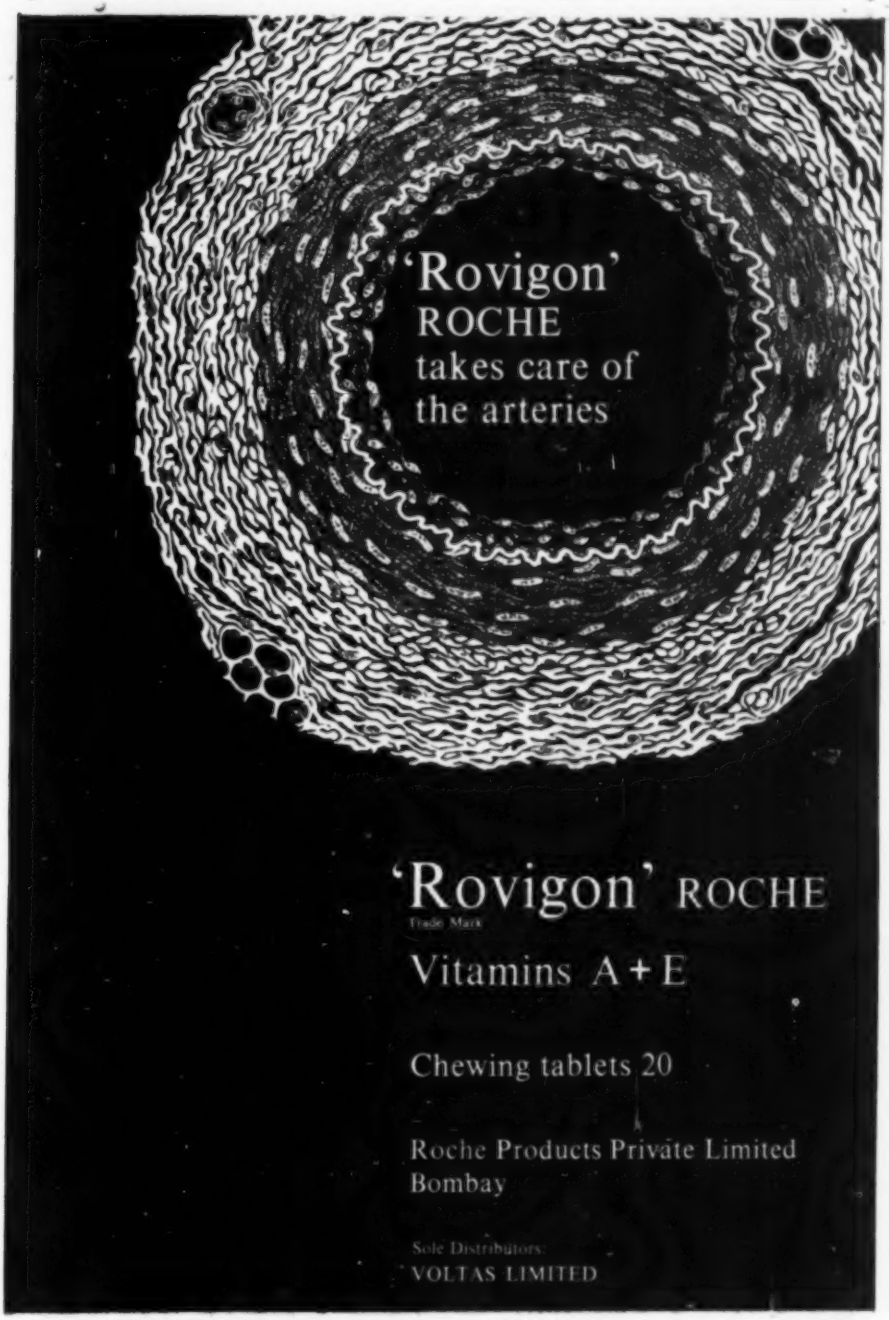
Day of disappearance of parotid swelling completely, counting from the day of onset of the disease	No. of cases		
	Control group	DHE-treated group	Total
3rd ...	—	—	—
4th ...	2	2	4
5th ...	3	5	8
6th ...	4	4	8
7th ...	6	3	9
8th ...	3	—	3
9th ...	1	2	3
10th ...	2	1	3
11th ...	1	3	4
12th ...	—	—	—
13th ...	1	—	1
14th ...	—	—	—
16th ...	1	—	1
	24	20	44

TABLE 7—SHOWING THE DAY OF DISAPPEARANCE OF PAROTID SWELLING AFTER TREATMENT (45 CASES)

Day of disappearance of parotid swelling counting from the day when treatment began	No. of cases		
	Control group	DHE-treated group	Total
1st ...	—	1	1
2nd ...	—	5	5
3rd ...	6	3	9
4th ...	6	6	12
5th ...	7	3	10
6th ...	1	—	1
7th ...	3	2	5
8th ...	—	1	1
9th ...	—	1	1
13th ...	—	—	—
Total ...	13	22	95

TABLE 8—SHOWING NO. OF CASES HAVING RELIEF FROM PAIN FROM THE DAY OF ONSET AND AFTER TREATMENT

No. of days	No. of cases			
	Relief of pain in control group		Relief of pain in DHE group	
	From day of onset	After treatment	From day of onset	After treatment
Before 24 hours	—	—	—	4
1	1	3	3	1
2	2	2	1	2
3	1	2	1	—
4	1	—	3	1
5	2	—	—	—
6	—	—	1	—
7	—	—	—	—
8	—	—	—	:
Total	7	7	9	9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The average period for complete subsidence of pain was 2 days in the control group and 2·3 days in the DHE group. This is in sharp contradistinction to the results of other workers who noted a prompt relief of pain in DHE-treated patients.

Toxicity—Special attention was paid to any toxic manifestations on administration of DHE that may arise during treatment. Only in two cases treated with DHE were minor toxic reactions detectable. These consisted of slight vomiting and nausea.

Discussion

The observations that have been presented above are not entirely in keeping with the reported value of DHE in the treatment of mumps. Most authors have reported an immediate effect on pyrexia within 24 hours from the commencement of treatment. Jobanputra (1955) claims it within 8-12 hours and Vaidya (1957) within 24 hours. Although this was so in a fair number of cases in our series, it was not invariably true. On the other hand, an alleviation of the swelling has generally been reported to be the last to occur. In this series, this effect manifested itself to a certain degree in practically all cases treated with DHE within 24 hours and a fair proportion of these cases showed a complete subsidence of the swelling after 48 hours. The effect on pain was also not in conformity with previous experience, as most cases suffering from this complaint did not materially differ in their response from the control group.

It is difficult to generalise from a small series like the one presented ; but in the absence of any other comparatively efficacious measure for the relief of mumps, DHE seems to be a useful remedy to cut short the symptomatology of this disease. More encouraging results might be expected if the dosage schedule of DHE is increased to 3 successive injections daily as done by other authors instead of single administrations as in this series. There is no rational basis that one can offer for the action of a predominantly sympathicolytic drug in the viral infection and one has to resort to empiricism to explain the beneficial effects observed.

Summary

A series of 50 cases of mumps in various stages of the disease has been studied to evaluate the efficacy of DHE.

The series was divided equally into control and DHE-treated groups.

DHE was observed to have a possible action in cutting short the course of the disease.

Acknowledgment

The authors are grateful to Dr. J. K. Thanawala, Medical Superintendent of the Hospital for valuable suggestions and permission to publish the report.

We are also thankful to Shri H. Cooper of Messrs. Sandoz Ltd., for keeping at our disposal sufficient quantity of the drug for the clinical trial; and Dr. R. J. Vaz, Medical Director, Sandoz Ltd., for useful suggestions.

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SPECIAL ARTICLE

ROLE OF CONSERVATIVE THERAPY IN ACUTE ABDOMEN*

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Diagnosis and treatment of acute abdomen have always been great problems for even an experienced and seasoned surgeon. Acute abdomen, though a surgical problem, is not necessarily treated with immediate surgery.

The famous statement of Lord Moynihan that, "Surgery is now safe for the patient, let us make the patient safe for the surgery" not only holds good, but is also practised on a large scale today. The waiting-in period is made safer with the adoption of medical measures available during the last two decades. Previously the operative mortality in acute abdomen was very high and was really alarming in late cases of perforative peritonitis. The advent of broad-spectrum antibiotics, their proper and adequate use, the understanding of the mechanism of body fluids and electrolytic balance, the decompression procedures adopted in gastro-intestinal disturbances and better methods of anaesthesia, have definitely brought down the operative mortality to acceptable minimum. Now the surgeon can dare to take up curative and even radical operative procedures in acute abdomen, with lower mortality rate, sometimes surprisingly comparable to that of elective surgery.

The old dictum, whenever in doubt always open and see, does not hold good these days at least.

* Based on a paper read at the V Poona Medical Congress, May 1959.

Previously waiting-in period in a doubtful case was not advisable. It was thought that exploration of such cases hardly involved any risk as compared to that of wait and watch till the diagnosis was certain. This viewpoint is gradually changing. Expectant line of treatment is tried in some cases of doubtful diagnosis without allowing the patient's general condition to deteriorate and this is only possible because of newer and better medical measures.

With the conservative treatment, an emergency surgery can be avoided and later the patient can be made safer for surgery by proper adequate preparation after confirming the diagnosis with the necessary investigations.

Thus elective surgery gives better results in the long run than emergency surgical procedure, if it could be avoided, and curative procedures can be adopted in elective surgery with safety, especially for our patients who are mostly poor risks for emergency surgery.

Cases for Conservative Therapy

In the following types of cases, there is no choice left to the attending physician and he has to adopt conservative treatment :

(1) Patient who refuses an operation in spite of convincing arguments ; (2) Lack of transport facilities to shift the patient to a well-equipped hospital ; and (3) Unavoidable delay in getting the necessary surgical aid.

To treat such cases under odd circumstances is a difficult problem and hence every attending physician should try to understand the details of such a therapy and also its limitations.

If at all by preference, a case is selected for conservative therapy, then it should be carried out in a well-equipped hospital which has fully trained resident and nursing staff. The surgeon should supervise the treatment and examine the case himself at least twice daily and hold himself ready to operate at a moment's notice, should this prove necessary.

The cases treated with conservative therapy are constantly a source of worry and uncertainty to the attending surgeon ; but if he operates, he is confident and comfortable as he is definite about the course and progress of the case. The case treated on conservative therapy is often taken up light-heartedly by the untrained attendants, relatives and by the patient himself than a case selected for operative procedures. Thus the seriousness of the case is not recognised. Patients treated and relieved by such therapy are also reluctant for further investigations and elective surgery. They only return as emergency cases, sometimes in a moribund condition when little can be done to save them.

Social and economic aspects of the patient must also be considered while adopting the conservative treatment especially when operative intervention involves no greater risk to life. The only earning hand and active member of the family finds it difficult to return to the hospital for elective surgery. He has really no time to spare at the crowded hospital for hours and days together to get himself investigated before elective surgery could be decided upon. His household difficulties, leave problems at his office and fear of losing his job, will deter him from returning for such procedures even though he is aware of the seriousness of the disease.

The various advantages and disadvantages of conservative therapy must be carefully and seriously considered, of course, not at the cost of the operative risks involved.

Conservative therapy does not mean something like old medical treatment and it does not include conservative surgical procedures. Any treatment, short of surgery, is included in conservative therapy. It means constant, careful and intelligent observation of the patient's condition at regular intervals and secondly to relieve his pain, restlessness, distension and vomiting with suitable measures, combat the infection with adequate and proper use of antibiotics, and maintain the nutritional status of the patient. The following are considered essential :

1. Temperature, pulse and respiration rates, and blood-pressure readings should be recorded at from half-hourly to four-hourly intervals as the cases may require ; 2. Pain, tenderness, distension, and rigidity should be studied as regards their site, extent, severity and character ; 3. In the case of a swelling or a lump, the size, shape and consistency should be noted.

All these signs should subside gradually during the course of conservative therapy. Onset or disappearance of intestinal peristalsis and vomiting should be noted to understand the progress of the case.

Treatment—Complete rest in bed should be immediately instituted, constant change in position may avoid hypostatic congestion. Fowler's position should not be made compulsory. The best position is the one that is most comfortable to the patient. Hygiene of the mouth and back should be maintained. The bowels and the bladder should be looked after at regular intervals. High and

retention enemas are contra-indicated. The intake and output charts should be maintained to understand the patient's nutritional needs from day to day. Vomiting and gastro-intestinal distension should be treated by continuous or intermittent gastric suction with Ryle's tube. When decompression is satisfactory and vomiting has stopped the suction may be discontinued for a few hours to observe its effect. The gastric suction helps in preventing further leakage through the peptic ulcer perforation.

Proper inquiries should be made as regards hypersensitivity to any drug especially penicillin. Penicillin 500,000 units T.D. and streptomycin 0·5 g. B.D. should be started routinely. In heavily infected cases with perforative peritonitis with or without gangrene, broad spectrum antibiotics should be given parenterally. In some cases of toxaemia due to severe infection intravenous cortisone along with broad spectrum antibiotics helps a great deal.

Shock and collapse should be immediately treated on usual lines.

Pain in acute abdomen should be relieved with pethidine or morphia, once the diagnosis and treatment is settled. Masking of the symptoms which may not help in correctly judging the progress of the case can be avoided by small doses of such drugs at regular intervals. Morphia should never be given in cases where the disease is related to the gall bladder or pancreas.

Nutritional problems—For the first 48 hours, no fluids are given orally. The intake output charts will guide the amount of fluids. Four pints of 5 per cent or 10 per cent dextrose and two pints of normal saline are given per day, 60 to 120 drops per minute, by the intravenous route.

If the distension has subsided, vomiting has stopped and normal intestinal peristalsis restored, then oral feeds like glucose-water, half strength saline and fruit juices are started. If the oral feeds are contraindicated and renal function is normal, the output charts will still guide the intake of fluids. If gastric or intestinal suction is still continued, it should be measured and the same amount replaced by special fluids which have similar composition as regards the electrolytes. This will avoid the depletion of the electrolytes concerned.

If nutrition is to be maintained by intravenous route for more than 4 days, then the daily requirement of 6 g. of nitrogen in the form of 1000 cc. of casein hydrolysate should be given along with small doses of blood transfusion wherever necessary, provided the kidneys are functioning normally. Parenteral administration of vitamins is always advisable.

Problem of Selecting Cases for Conservative Therapy

Trauma—In cases of traumatic injury of the abdomen, and particularly in the penetrating type, the abdomen must always be explored. The non-penetrating type and subcutaneous abdominal injuries should be observed for a few hours in a well-equipped hospital ; they should be explored whenever there is the slightest indication suggestive of internal haemorrhage or perforation.

Obstruction—The obstructive types of acute abdomen must be carefully watched and treated for not more than 2 to 4 hours and after correcting the dehydration and gastro-intestinal decompression they should be taken up for surgery. It is only in the following types of cases that one may be allowed to follow conservative therapy :

1. Intestinal obstruction due to intra-abdominal adhesions of previous operation.

2. Subacute intestinal obstruction due to tuberculous peritoneal adhesions.

3. Intestinal obstruction due to roundworms.

4. Intestinal obstruction due to paralytic ileus (cases with peritonitis are not included in this variety).

Perforation—In cases of peptic ulcer perforation, we like to resort to conservative therapy in the following types of cases :

1. Very early or doubtful cases ; 2. Late cases where by now the perforation has sealed off ; 3. Aged and infirm patients with associated metabolic disturbance ; 4. Cases where duodenal perforation has occurred on an empty stomach and no oral feeds are given later and where the gas shadow is very small.

It has been observed that about 50 per cent cases of duodenal ulcer with perforation get cured without any further treatment. It is not so with gastric ulcer cases.

Typhoid ulcer perforation of small intestine gives rise to severe type of peritonitis in a patient who is already dehydrated and toxic. With the use of chloramphenicol such cases are few in number. Previously the mortality rate was very high. With the parenteral administration of broad spectrum antibiotics and better methods of maintaining the nutrition, the operative mortality rate has been remarkably reduced, except in very late and neglected cases where there is no room for conservative therapy.

The intestinal perforation through a tuberculous ulcer is usually small with a slow leak; the peritonitis is localised. These cases are sometimes associated with subacute intestinal obstruction.

Cases with perforation of the large bowel are common in older patients. Tuberculous, dysenteric and malignant ulcers may perforate or the perforation may occur proximal to the obstructive lesion like a malignant stricture. These cases should never be treated on conservative lines.

Cases with mesenteric thrombosis are very rare. In one of our cases there was extensive thrombosis involving the whole length of intestine and nothing could be done. Such cases should always be explored.

Cases with acute pancreatitis are always difficult for diagnosis. Very little can be done in these cases with operative procedures. Palliative surgery does not help to prevent further complications and curative surgical measures involve maximum risk to life and hence not advisable.

With the latest medical measures of treating shock, dehydration and infection the results with conservative therapy are encouraging. Surgery is not advisable except for diagnosis in a doubtful case.

Cases of acute cholecystitis are rare in our country. They may be treated on conservative lines. There is a very high incidence of such cases in the United States where surgery is invariably resorted to. There are technical difficulties in an emergency operative procedure even in the best of hands. In the United States the incidence of post-operative benign stricture of the bile passages due to surgical trauma is very high. The latest trend of thought is for delayed or late surgery in acute cholecystitis. The symptoms of acute cholecystitis in some cases do not correspond to the underlying pathology and hence proper assessment has to be made of the seriousness of such a case.

In cases of acute appendicitis the physical signs and history of similar attacks in the past are of greater importance than the duration in selecting cases for conservative therapy. We select the following types of cases:

1. Cases with doubtful diagnosis; 2. Early and mild attacks with history suggestive of chronic dysentery; 3. Appendicular colic as a first attack. All these cases are taken up later for elective interval appendicectomy after confirming the diagnosis.

All types of abdominal colic are treated with antispasmodics and rest.

CASE NOTES

STAPHYLOCOCCAL SEPTICAEMIA

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In recent years, it appears that the incidence of staphylococcus septicaemia is far greater than what it was a few years back. This increase in the incidence is mostly ascribed to the cross-infection taking place in hospitals and elsewhere by antibiotic-resistant strains of the organism, the danger of which is now attaining a fairly high proportion (Howe, 1954; Spink, 1954; Barber and Burston, 1955; Wysham and Kirby, 1957; Hassall and Rountree, 1959).

Before 1952 it was rare to find general staphylococcal infection. Tebbult could find records of only 18 cases between 1910-1928 (Kellaway, MacCallum and Tebbult, 1928).

The criteria for the diagnosis of such generalised infection with coagulase-positive staphylococci is mostly based on—

(a) Clinical evidence of generalised infection together with culture of the organism from one or more sites.
(b) Growth of the organism from blood culture.
(c) Further if the patient does not survive to isolate them from the affected organs showing pyogenic lesions or from blood at autopsy.

The object of this report is to draw the attention to the occurrence of such generalised infection which many times is missed and is treated for diseases simulating those with similar clinical manifestations—continuous pyrexia with toxicity, e.g., enteric fever, brucellosis, typhus fever, etc.

The case under report was admitted to Shri Sayaji Hospital with clinical manifestation of continuous fever and toxic manifestations, not responding to general antibiotic therapy.

Case Report

The patient, a male child aged 8 years, had temperature with cough for ten days. He had no stools for 3 days and had loss of appetite and malaise. The urine was high coloured. He was admitted to the hospital on 19-12-58. Before admission the patient was under the care of a private practitioner where clinical diagnosis of enteric fever was made. He was treated with antibiotics, e.g., pencillin and chloramphenicol. On the day

of admission he was severely ill, confused and was running a temperature of 101°F. The clinical diagnosis on admission was pyrexia of unknown origin.

On examination the patient was found to have well-marked anaemia.

LABORATORY INVESTIGATIONS :

Blood—The total R.B.C. count was 2·5 million/c.mm. Haemoglobin was 5 g. per cent. W.B.C. count was 7,200/c.mm. with polymorphs 72 per cent, lymphocytes 23 per cent, eosinophils 5 per cent. Erythrocytic sedimentation rate was increased more at the end of the 1st hour.

Urine examination showed albumen +, pus cells + + but no R.B.C.

Stool examination showed absence of any parasitic infection.

Bacteriology and serology—The throat swab culture showed predominant growth of coagulase-positive staphylococci resistant to pencillin, moderate growth of haemolytic streptococci with general accentuation of the bacterial flora. Blood for serology showed agglutinins against enteric group to the titre of 1/125. Agglutinins against brucellosis and typhus were low to the titre of 1 in 4 or 1 : 4 and 1 in 25 or 1 : 25 respectively. No rise in titre for agglutinins against all these could be demonstrated on repetition of the test (agglutination test) after a week. Blood culture on 20-12-58 was negative. Subsequent attempt to isolate brucella organism through repeated blood-culture on 5-1-59 revealed interesting finding. The organism isolated through this special device required for brucella organisms (Liver-infusion agar in a screw-capped bottle having 10/CO_2 atmosphere) was coagulase-positive staphylococci. This organism was tested for antibiotic sensitivity against pencillin, streptomycin, chloramphenicol and aureomycin and was found to be resistant against all these antibiotics.

The organism was sensitive to erythromycin. Treatment with this antibiotic resulted in remission of temperature. The patient remained afebrile in the hospital for a week and was then discharged apparently cured.

Attempt to isolate the organism from other sources, viz., relatives, doctors and nurses attending on the patient was made but did not meet with any significant success and hence from the epidemiological standpoint no definite information about the source of infection could be established.

Technique of blood culture—10 cc. of blood was collected aseptically through vein puncture and injected directly to the screw-capped rubber-sealed bottle having liver infusion agar slope with 50 cc. of nutrient broth. 10 per cent of CO_2 was introduced accurately after evacuating proportionate amount of air through vaccuum pump against manometer gauge. The bottle was kept in a slanting position for 6 hours and then kept vertically. A profuse growth after 48 hours appeared on the agar slope. Detailed study of the organism isolated revealed it to be staphylococcus aureus, coagulase-positive and resistant to penicilin and other antibiotics.

Staphylococcal phage types 80/81, 31 B/47, 31 B, 47 are known to be most notorious and are now shown to be widespread (Rountree and Beard, 1958 and Blair and Carr, 1958). In the present investigation phage typing could not be done for want of the necessary facilities.

Discussion

The correct therapy depends on establishing the identity of the infective organism and determining its antibiotic sensitivity. Since treatment in these cases is urgent and must be started before this information is available it is important to use drugs which are most likely to be effective. The choice must therefore be based on past experience

Since the infecting organism may be resistant even to tetracyclines and since the majority of these patients are extremely ill, initial treatment nowadays recommended is with both chloramphenicol and erythromycin preferably parenterally followed by normal dosage by mouth. Of the other newer antibiotics, novobiocin may be indicated subsequently, according to the result of sensitivity tests and the patient's response to treatment.

The role of staphylococcal antitoxin therapy in such cases with apparent overwhelming infections accompanied by toxaemia seems to be of justifiable significance.

The technique adopted for blood culture here is of significance. The procedure minimises to a large extent the secondary contamination commonly met with in such procedures, and the CO_2 incorporation positively promoted the growth of staphylococcus. Nutrient agar in place of liver infusion agar as used here for making the slope could safely be used.

The case under report is an accidental finding. It should be regarded as an eye-opener. It proves beyond doubt that in the present days of such staphylococcus (resistant strain) hazards it should be included in the list of continuous pyrexia and should specifically be looked for along with the probe for other causes.

Summary

A case of staphylococcal septicaemia simulating a case of enteric fever or brucellosis is discussed.

The present-day increase of staphylococcus antibiotic resistant strains and their hazard is emphasised.

The line of therapy to be followed as far as possible is discussed.

The significance of the technique adopted for blood culture is discussed.

ACKNOWLEDGMENTS

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MARFAN'S SYNDROME

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Marfan's syndrome is a relatively rare familial symptom complex, characterised by widespread aberrations in the mesodermal tissues of the body. Since its first description by Marfan in 1896, quite a good deal of literature has appeared on the subject but the aetiology of the condition is still debated. However, the familial and hereditary tendency of the condition is well established. The most conspicuous features of the syndrome are ocular, skeletal and cardiovascular defects.

Ocular defects, present in 40 to 80 per cent cases of the syndrome, are quite characteristic and undoubtedly offer a valuable aid in diagnosing the condition. Ocular complications include ectopia lentis, iridodonesis, small pupils with poor response to atropine, atrophy of iris stroma, strabismus, nystagmus, anomalies of lids and lashes may be also present. Myopia is usually present and vision seriously impaired.

Skeletal defects include elongation of the long bones, a dolichocephalic skull, undeveloped musculature, absence of subcutaneous fat, arachnodactyly, scoliosis and kyphosis.

Cardiovascular defects include cardiac hypertrophy, valvular deformity, aortic medionecrosis and auricular septal defects.

CASE REPORTS

CASE 1—A 18 year old Mohammedan male, blacksmith by occupation, attended the Ophthalmic O.P.D. of M. Y. Hospital, Indore, on 13-2-59, with complaints of loss of vision in right eye and dimness of vision in left eye for the last 3 years.

On examination the right eye was soft and sunken with no perception of light. In the left eye the visual acuity was F.C. at 4 feet. The iris was tremulous and atrophic. The pupil was small and reacted very poorly to atropinisation. The lens was dislocated.

The patient was tall (height 5′ 11″) and thin. There was marked dolicocephaly and arachnodactyly. The limbs were long and slender. The musculature was poorly developed and hypotonic and there was general emaciation. The chest was enlongated and funnel-shaped. His weight was 110 lb.

Fluoroscopy—Chest was emphysematous. The pulmonary conus was prominent.

E.C.G.—Revealed right bundle branch block.

Other family members of the patient were examined but none showed any evidence of this disease.

CASE 2—A 14 year old Mohammedan girl attended the Ophthalmic O.P.D. of M. Y. Hospital, Indore, on 24-2-59, with the complaint of dimness of vision since childhood.

On examination—In both the eyes the visual acuity was F.C. at 10 feet. Iris was tremulous and stroma atrophic. Lens was subluxated upward and outward. Mydriasis under atropine was poor and retinoscopy through the phakic portion revealed myopia of −10 D. Sph in both eyes. On fundoscopy the condition of the vitreous and retina was found to be normal.

The skull was dolicocephalic. Arachnodactyly was conspicuous. The limbs were long and slender. The general musculature was very poorly developed. Secondary sexual characters were not at all developed. The chest was elongated. Her height was 5′ 2″ and weight 70 lb.

There was no evidence of involvement of the cardiovascular system.

Other members of the patient's family were examined but no abnormality associated with this condition was found.

SUMMARY

Two typical cases of Marfan's syndrome have been reported. In both, ocular and skeletal defects were conspicuous but cardiovascular involvement was present in one case only. Visual acuity in both cases improved with suitable glasses. In Case 2, there was complete absence of development of secondary sexual characteristics, and such an association in this symptom-complex is well known.

CARDIORESPIRATORY SYNDROME OF EXTREME OBESITY

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Recently cases of extreme obesity presenting marked exertional dyspnoea have been reported. On investigation no abnormality is detected in the cardiorespiratory system. These cases may show varying degrees of right-sided failure but no case with rapidly progressing congestive failure has been described. The following case with a fatal outcome, in which no other diagnosis seems to fit in except cardiorespiratory syndrome of extreme obesity, may be of interest.

Case Report

A Hindu male, 28 years, reported in January, 1957 for breathlessness on walking. The patient was healthy and normal upto the age of 10 when he started putting on weight and by the age of 20 years he weighed 20 stones. At that time also he could not walk very long but otherwise he was healthy. He was married and father of a child. There was nothing relevant in the family history.

For the last 6 months he had occasional bouts of cough with small amounts of mucopurulent expectoration and was getting more and more dyspnoeic on walking. In bed he was quite comfortable and used to sleep flat.

On examination he was 20 stones in weight and his temperature was normal ; there was central cyanosis on the lips and the tongue ; the lungs showed basal crepitations on both sides ; the blood pressure was 130/80 mm. Hg and the heart sounds were normal. The fundus oculi was normal and the central nervous system showed no abnormality. The spleen and the liver were not enlarged.

Laboratory investigations showed haemoglobin 17 g. per cent, total red blood cells 6·2 million per cmm., total leucocytes 8,700 per cmm. with polymorphonuclear neutrophils 73 per cent, lymphocytes 22 per cent, eosinophils 3 per cent and monocytes 2 per cent. The sputum on microscopic examination showed a few pus cells only. Urine was normal and then urinary excretion of 17-ketosteroids was within normal limits.

X-ray of the chest showed normal heart shadow ; there was no abnormality in the lungs except prominent pulmonary root marking on both sides. X-ray of the skull showed pituitary fossa of normal size. E.C.G. showed no abnormality.

From the history and clinical examination, the first possibility considered was chronic cor pulmonale, but x-ray of the lungs negatived such a possibility. Other possibilities were Cushing syndrome and polycythaemia vera.

As regards Cushing syndrome there were no other clinical features except obesity which was also not typical of this condition. There were no striae, the central nervous system, the blood pressure and 17-ketosteroids in the urine were normal and x-ray of the skull showed no abnormality.

Polycythaemia vera can be ruled out because of the absence of enlargement of the spleen and of other clinical features of the disease. Raised red blood cell count and haemoglobin percentage were due to hypoventilation.

The patient was put on reducing diet of 800 calories, salt restriction, digoxin and mercurials. He showed improvement and was on maintenance dose of digoxin and weekly injection of a mercurial diuretic. His weight came down to 16 stones. After six months of original reporting, though still on maintenance treatment, he developed oedema of the feet and went in for a right-sided failure. All treatments proved of no avail and the patient died within two months of the onset of the congestive failure.

Comments

What was the diagnosis of the case? Repeated x-ray examinations of the chest showed no gross pathology in the lungs and so it was not a case of cor pulmonale. The blood pressure was normal. There was no evidence of valvular lesion and E.C.G. often repeated showed no evidence of myocardial infarction. There was marked dyspnoea with central cyanosis due to pulmonary hypoventilation which was responsible for secondary polycythaemia also. Was he a case of "cardiorespiratory syndrome of extreme obesity" as described by Kerr and Lagen (1936) and recently by Berlyne (1958). This syndrome is characterised by obesity, cyanosis, arterial oxygen desaturation and polycythaemia. Varying degrees of right-sided failure may be present but such sudden progress in the right-sided failure has not been described so far. This patient was always able to lie flat in bed comfortably and it is described that patients of this syndrome tolerate lying down position much better than those of other types of cor pulmonale. This patient thus simulates already the clinical condition of 'cardio-respiratory syndrome of extreme obesity'.

References

Kerr, W. J. and Lagen, J. B.—*Ann. Int. Med.*, **10** : 569, 1936.

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WHAT ARE TROPICAL DISEASES?

Geographically, tropical means the area bounded by the Tropic of Cancer and the Tropic of Capricorn. It is natural therefore to expect that the word tropical should be related and applicable to those specific diseases which are only tropical in distribution, that is, those associated with the tropical climate which is encountered in a zone extending from the equator to the area where the mean annual isotherm is 20°C (68°F). This zone varies from the geographical definition as the demarcation lines known as Supan's lines[1] instead of being straight are extremely wavy. The northern line is situated 35° north latitude and the southern at rather less than 30° south latitude. Thus on the basis of isotherm the area which alternately decreases and increases includes Central America, large portions of South America and Africa, Madagascar, the West Indies, a portion of India, Ceylon, Arabia, Indo-China, Sumatra, Java, Borneo, the Philippine Islands, New Guina, a part of Australia and a number of small islands.

The so-called tropical diseases are not limited to the tropics only but are also prevalent in the temperate zones. There are various other medical conditions which occur in the tropics in common with other non-tropical regions of the world.

How has then the label tropical diseases come into being with establishment of what modern tropical medicine is today, as a unit, separate from the body-corporate of medicine as a whole?

In early times medicine was relatively highly developed in the East (Egypt and India) while it was very primitive in the temperate zones[1] (West). The West however was aware of the existence of the East. The problem of finding a way to the East was solved in 1415 A.D. and in the last decade of the fifteenth century the route to India *via* the Cape was made known. With the establishment of contact the urge to discover new lands heightened and regular channels of trade and commerce were established. The facilities of travel at that time were limited to overland and sea routes. The latter was much preferred and thus meant more ships and numerous crew. To keep the crew fit, during the course of long journeys, it was customary to provide a surgeon or a person with medical knowledge for each vessel. Many of them were not only intelligent but had great powers of observation also. Out of them some settled in these new lands and made records of their experiences. In this way a curious collection of facts developed based partly on geography, partly on zoology and botany, partly on ethnology and partly on medicine. And in these early collections are found references to the diseases prevalent in the tropics and perhaps thus sprang the words tropical diseases and tropical medicine.

With the increase in settlements founded by Europeans and their families the number of medical practitioners also went up. Newer knowledge and newer diseases unknown in temperate zones soon resulted in numerous publications. This naturally reflected on the teaching and tropical disease and tropical medicine became a separate unit out of medicine as a whole.

In the course of the last few centuries the pattern and incidence of many diseases have altered. History has shown that the diseases which were once cosmopolitan maladies, occurring endemically or in epidemics, are more prevalent and getting increasingly confined to the tropics at present. Complete eradication of such diseases from most of the temperate zones has not been effected as a result of climatic influence but because of strict methods of isolation, preventive measures, improvement in economic status, better sanitation and hygiene and better nutrition. That is, through achievement of positive health.

[1] CASTELLANI, A. AND CHALMERS, A. J.—Manual of Tropical Medicine, 3rd Ed., 1919, Bailliere Tindall and Cox, London.

There are no feasible grounds to support the idea that there ought to exist a special category of diseases, which are to be classed as tropical. What diseases then should or ought to be considered tropical? It appears that to start with only certain diseases which were commonly encountered by settlers in the tropics alone were considered tropical. With betterment of communication and with easier and faster travel facilities, dissemination of tropical disease became quicker and widespread. Thus at present, separation of tropical medicine from body-corporate of medical sciences is artificial[2]. The present-day categorisation is therefore based more on tradition and arbitrary selection than logic. There are only a very few diseases which do not occur in the tropics and there are many which are as common or commoner in the temperate zones. Perhaps diseases which are more prevalent in the tropics and exhibit special features ought to be classed as tropical diseases. Even so, the changing face of the disease incidence will be a bar to accepting the contention *in toto*. One of the living examples is the rapid decline and extinction of malaria, the notorious killer, from many of the tropical regions. The other difficulty is that the diseases in the tropics show marked variation in the incidence of occurrence from place to place and from season to season.

There is one distinct demarcation of the tropical diseases from others, and that lies in the process of transmission of tropical diseases. This is seldom simple or straightforward. There is not only the parasite itself to be considered but also the presence of an insect vector, an intermediate host and/or an animal reservoir all of which have to be taken into account. The geographic distribution of the majority of the tropical diseases is linked with the presence of proved vectors. The incidence therefore varies according to the distribution of these insect vectors. Many of the insects infect habitations especially the slums and rural areas. Some of them are merely mechanical transmitters, contaminating foods and drinks by physical contact only. Many, however, bite and cause serious and fatal diseases. Besides because of the heat, major part of the body is usually kept bare and thus is the ideal target for the biting insects. Water is another chief source of the diseases in the tropics. Bathing is a daily necessity. Water is also used from a common source for drinking, laundering and ablutions. Faecal contamination is a constant source of infection.

Another factor which makes the people of tropical countries more vulnerable to disease is the lack of balanced diet, particularly the lack of animal proteins which are beyond the reach of the majority. Low economic condition and non-availability of pure food predispose the people to more nutritional disorders. The majority suffer from subclinical deficiency state.

The incidence, persistence and spread of tropical diseases are influenced by rainfall in the locality, nature of water supply, terrain and environment. These are factors far more important in the tropics than in the temperate zones.

More often the incidence is dominated by human factors. *Melas*, pilgrimages and religious gatherings taking place all the year round and occasionally with special significance at intervals are the prime factors. Unhygienic social conditions, apathy in the achievement of positive health, ignorance, prejudices, and poor economic status all add to predisposition not only to tropical diseases but to every other disease prevalent in the tropics. The physical geography during the last few thousand years has not much changed. The changes in the flora and fauna are also not considerable. Whatever change has occurred, has taken place in the social and economic conditions.

The tropical diseases when reduced to fundamentals are related to three main factors. Insect vectors, water supply and food. The word 'tropical' perhaps from the point of view of medical sciences does not mean the geographical region or the climate, but the living conditions and sanitary standards.

[2] Napier, L. E.—The Principles and Practice of Tropical Medicine, 1946, Macmillan Company, New York.

CURRENT MEDICAL LITERATURE

Atropine Cigarettes in Asthma and Emphysema

HERXHEIMER, H. (*Brit. M. J.*, **2** : 167, 1959) from the Department of Allergology, University of Berlin, observes :

Atropine administered locally in cigarette smoke on wet aerosols increases the vital capacity and gives a feeling of relief in cases of mild or moderate chronic asthma and emphysema.

The effective dose probably lies below 0·4 mg. of atropine sulphate.

Atropine is easily administered by smoking. This method of administration is simple; as the dosage can be accurately controlled, it is preferable to that of wet aerosols and of stramonium cigarettes.

Camoquin in Acute Lepra Reaction

THANGARAJ, R. H. (*Leprosy Rev.*, **30** : 106, 1959) from Purulia Leprosy Home and Hospital, Purulia, West Bengal, writes :

Camoquin is effective in the control of acute lepra reaction in lepromatous leprosy at an initial dosage of three tablets by mouth, followed by two tablets daily for four days. In one case only the camoquin was given for six days and in that case it failed. In this and in one other case in which camoquin failed, subsequent use of potassium antimony tartrate was successful.

Compared with a group on potassium antimony tartrate, camoquin achieves its effect in less time. In an untreated group, nine out of fifteen cases became free of the reaction spontaneously in four to eight days.

Acupuncture and Galvanic Current in the Treatment of Lepra Reaction

HUAI-AN, K. AND OTHERS (*Chinese J. Dermat.*, **6** : 298, 1958, Ref. *Chinese M. J.*, **77** : 287, 1958) write :

Nerve and joint pains and erythema nodosum in leprosy patients were treated by the typical techniques of Chinese acupuncture. Apparently the needle is inserted into the nerve trunk considered to govern the area, and galvanic current from a 1·5 volt storage cell is allowed to run for 30 to 50 minutes. This treatment is given every alternate day until 15 treatments have been given, and then a rest of one to two weeks is given. In 72 cases of severe arthralgia and neuralgia and in 21 cases with erythema nodosum the results were very good. Thus in 18 cases of erythema nodosum the lesions subsided rapidly in 15 and improved greatly in 3.

Toxic Reactions Associated with Sulphamethoxypyridazine

SALVAGGIO, J. AND GONZALEZ, F. (*Ann. Int. Med.*, **51** : 60, 1959) from the Department of Medicine, Louisiana State University School of Medicine, and the Medical Service, Charity Hospital of Louisiana New Orleans, Louisiana, write :

Three cases of severe reactions to the sulphamethoxypyridazine, one fatal, have been reported. The clinical picture met the criteria for the diagnosis of Stevens-Johnson syndrome. To date, no deaths have been reported in association with this drug. Sulphamethoxypyridazine is undoubtedly a valuable therapeutic contribution, but it is not exempt from serious and dangerous side-effects, as one may be led to believe from the results of previous investigations. It may be associated with untoward reactions involving a multiplicity of systems, among which are the skin, the gastro-intestinal tract, and the respiratory, the hematopoietic, and possibly the central nervous systems.

Hepatic Coma

TYOR, M. P. AND SIEKER, H. O. (*Am. J. Med.*, **27** : 50, 1959) from the Department of Medicine, Duke University, School of Medicine and Veterans Administration Hospital, Durham, North Carolina, from an analysis of study of biochemical and blood gas measurements in 49 cases of various liver disease observe :

There is a progressive increase in arterial ammonia concentration with increasing cerebral dysfunction, it was observed. Overlap of arterial ammonia values was present but was less evident when serial determinations were obtained from individual patients studied at different levels of consciousness.

The presence and extent of coma correlated more closely with arterial than peripheral venous ammonia concentrations. The extremity A-V ammonia difference was correlated with the height of the arterial level and the degree of peripheral A-V oxygen difference. It was concluded that peripheral A-V ammonia difference was controlled by two variables : (1) the concentration of ammonia in the arterial blood and (2) the quantity of blood flowing through the extremity.

Patients with cerebral dysfunction exhibited a significantly greater respiratory alkalosis than alert patients. It appeared likely that the alkalosis contributed to the disordered consciousness. However, its concomitance did not *per se* account for the occasional overlap between arterial ammonia concentrations and level of consciousness noted in individual patients.

Marked variation of arterial oxygen saturation was observed in this study. This variability was explained by the multiple processes which affected pulmonary circulation and ventilation in such patients.

None of the findings noted were necessarily of prognostic significance. However, the presence of azotaemia with associated oliguria was seen only in patients who died.

Clinical Experience with the Use of Neomycin in Hepatic Coma

FALOON, W. W. AND FISHER, C. J. (*A. M. A. Arch. Int. Med.*, **43** : 103, 1959, Ref. *Indian J. Child Health*, **8** : 462, 1959) write :

22 patients with history and physical findings consistent with alcoholic cirrhosis were followed during 25 episodes of coma or impending coma. Recovery was noted in 14 instances, one patient having experienced 3

episodes and another patient 2 episodes. Twenty-three instances of improvement were recorded in the twenty-five episodes. Eighteen patients received protein from the beginning of therapy with neomycin and of these, seven lived and eleven died, but improvement was noted prior to death in nine of the latter. Four patients received no dietary protein, and all survived, but of these, three had bleeding and thus had protein within the intestinal tract in excess of that present in the fasting state. A decrease in blood ammonia during therapy was observed in 16 of the 18 patients. Of those whose ammonia levels fell, eight lived and eight died, with all patients showing some improvement prior to the final outcome. Survival was far commoner in patients in whom therapy was initiated when coma was only Grade I, but little distinction between Grades II, III, and IV could be drawn from the results obtained. Six patients showed further progression of the neurological disease by one or more grades beyond the original state. Reclassification on this basis revealed that survival was less likely with greater neurological aberration. Seven of ten patients in Grades I and II survived, while only four of thirteen patients who developed Grade III or IV coma survived. Of the six whose neurological state became worse, only two lived, although three others showed improvement before death. The usual regimen of therapy included administration of 20 to 40 g. of protein orally, 12 g. oral neomycin daily, given on a schedule of 3 g. every six hours orally or by tube, intravenous dextrose, containing vitamins and potassium chloride. In patients with bleeding oesophageal varices control of bleeding was attempted by the insertion of a Sengstaken tube and use of balloon compression. Penicillin and streptomycin were administered to the majority of patients in an attempt to prevent complications such as pneumonia. Of the various findings on physical examination none showed correlations with final result, except for jaundice, ascites, or oedema. Of 12 patients with a bilirubin level greater than 3 mg. per 100 ml. 4 survived, and of the 9 patients with a bilirubin greater than 5 mg. per 100 ml. only 2 survived. The presence of visible abdominal collateral veins, which might be related to the degree of spontaneous shunting of blood around the liver, did not have any remarkable value in prognosis. In patients who demonstrated a fall in blood ammonia, such was usually apparent in 72 hours or less, and the ammonia concentration remained low unless therapy was interrupted. Analysis of the patients who failed to survive reveals only two in whom neomycin appeared to have no effect. In these patients no ammonia change was noted, and their clinical state became progressively worse. The probable effect of neomycin is that of reducing the intestinal bacterial flora, and blood ammonia concentration cannot be expected to fall unless the liver and other tissues are capable of removing the ammonia already present. Thus, in a patient with severe and rapidly progressing disease where these mechanisms are badly damaged, it is likely that neomycin will be less effective. Complete protein withdrawal for 48 hours after neomycin is initiated would appear desirable in order to allow maximal reduction in ammonia formation prior to the reduction in bacterial flora. In addition, there is good rationale and some evidence for the beneficial effects of the administration of cathartics and enemas. The present dose of neomycin, i.e., 12 g. may be excessive, and further studies will be necessary to establish the minimal effective dose.

Stuttering : Clinical and Electroencephalographic Findings

PIERCE, C. M. AND LIPCON, H. H. (*Military Med.*, **124** : 511, 1959) from the Department of Psychiatry, University of Cincinnati College of Medicine, Cincinnati, Ohio, give in the following lines the summary of their observations :

Thirty-six stutterers and 36 recruit non-stutterers were compared by electroencephalographs, history of symptomatic immaturity habits (enuresis, somnambulism) and neurological findings. Also compared were histories of sickness, injury, periods of unconsciousness and handedness dominance.

Two thirds of the stutterers believed they had stuttered all their lives. There were no statistically significant differences in the two groups as regards : abnormal electroencephalographs, past history of serious illness or injury, known birth trauma, periods of unconsciousness or handedness dominance. Also the two groups were compatible in regard to a past or family history of enuresis, somnambulism, and epilepsy. Significant findings included the fact that 22 per cent of the stutterers and only 8 per cent of the controls had abnormal EEG's and associated incoordinate arm swing on walking and/or deviation of the protruded tongue. The experimental group had four times as many genitourinary system complaints. Stuttering seems less likely if the subject is in a secure and familiar situation.

The results are interpreted to demonstrate that in order to produce and sustain the habit of stuttering, there are interrelated factors of a psychic, social and an organic nature. Stuttering in naval recruits does not seem to be allied to the other common immaturity habits of enuresis and somnambulism. There is some discussion of theoretic and research aspects of stuttering, as well as a brief review of the literature on the subject.

Senile Kyphosis and Kinked Carotid

DOUBLEDAY, L. C. (*Geriatrics*, April, 1959, Ref. *J.A.M.A.*, **170** : 945, 1959) in dealing with the radiological aspects of carotid artery syndrome observes :

There appear to be two causal factors in the development of senile kyphosis—degenerative disk disease and loss of muscular tone. With the passage of years, the nucleus pulposus of the disk loses its turgor and the disk becomes desiccated (frequently calcifying in the lower thoracic region), and this results in narrowing of the disk spaces. Narrowing causes bulging of the annulus fibrosus, which strips the periosteum from the opposing vertebral margins, particularly anterolaterally and almost exclusively on the right. Calcification and ossification occur at these sites and give rise to the familiar hypertrophic spur formation. The position of the descending thoracic aorta on the left apparently

tends to preclude the formation of osteophytes on the left side. This condition has been termed osteoarthritis or even spondylitis deformans. Since the major changes affect the disks and the vertebral bodies—where there are no joints in the true sense of the word the term degenerative disk disease more aptly describes the underlying pathologic process . . . . . The phenomenon of "kinked carotid" is primarily the result of kyphosis. Those unfamiliar with this condition usually make the erroneous diagnosis of aneurysm of the carotid artery or even of enlarged lymph nodes in this area. This pseudoaneurysm is caused by tortuosity of the carotid artery on the right side and usually occurs in obese, hypertensive, arteriosclerotic women who exhibit kyphosis. If the kyphosis and arteriosclerosis are severe, kinking of the carotid may occur in nonobese subjects. . . . Kyphosis, arteriosclerosis, and a high diaphragm in obese subjects combined to cause relative elevation of the arch of the aorta within the thoracic cage. This results in tortuosity of the right carotid artery in an S-shaped bend or, in some instances, in a complete loop. A pulsating mass may be present in the right side of the neck.

Carcinoma of the Female Anogenital Tract

NEWMAN, W. AND KROMER, J. K. (*Surg. Gynec. & Obst.*, **108** : 273, 1959) from the Departments of Pathology and Obstetrics & Gynaecology, the George Washington University School of Medicine and the George Washington University Hospital, Washington, D.C., basing on the case histories of 6 patients with combined, histologically similar malignant lesions (epidermoid carcinoma) of the anogenital areas and cervix give in the following lines the summary of their observations :

These cases suggest that a patient with malignant lesions of the vulva, vagina, or perianal tags should routinely have biopsies of the cervix.

Patients with *in situ* epidermoid carcinoma or invasive epidermoid carcinoma of the cervix should be examined at frequent intervals with particular attention focussed on the vagina, vulva, and perianal areas with early recourse to biopsy.

The concept of "recurrence" *versus* new disease is discussed briefly.

Some implications of the multicentric "field" origin theory of cancer are discussed.

These cases are considered the expression at particular sites of a general underlying biologic phenomenon in the growth and progression of malignant disease in man.

Steroid Therapy in Surgical Patients

SCHNEEWIND, J. H. AND COLE, W. H. (*J. A. M. A.*, **170** : 1411, 1959) from the Department of Surgery, Research and Educational Hospitals, University of Illinois, give in the following lines the summary of their observations :

The most important condition in which steroids are useful in treating surgical patients is that of acute adrenal insufficiency after severe injury or illness. The most prominent sign of this condition is persistent hypotension which cannot be explained by blood loss or coronary disease and which does not respond to adequate blood replacement. In these conditions, rapid, adequate therapy with hydrocortisone administered intravenously may be lifesaving. Patients requiring operation who have been on long-term steroid therapy present the hazard of adrenal depression and an acute insufficiency during operation. We believe that the safest procedure is to prepare all of these patients with steroids prior to operation. Corticotropin may be of value before operation by effecting a feeling of well-being and increasing appetite and food intake. Other beneficial effects of corticotropin include suppression of fever, toxicity, and malaise in conditions such as regional enteritis, and diminution of hypersensitive reactions in haemolytic anaemia or thrombocytopenic purpura. Under such circumstances, when operation is contemplated in patients acutely ill with ulcerative colitis or purpura (less commonly with regional enteritis), administration of corticotropin may result in so much improvement that operation is made safe instead of being extremely hazardous. Contraindications to the use of steroids include active tuberculosis, malignant hypertension, uraemia, psychoses, and the presence of active ulcers in the gastrointestinal tract.

Prolonged Treatment of Chronic Pyelonephritis with Antibiotics in Small Doses

HASCHEK, H. (*Z. Urol.*, **51** : 542, 1958, Ref. *German M. Monthly*, **4** : 174, 1959) of Vienna observes :

Chronic pyelonephritis often fails to respond to a short course of antibiotics in large doses but is cured if this is followed by prolonged administration of small doses. The following plan was adopted : 3 g. of tetracycline plus 2 g. of "Kynex" (sulphamethoxypyridazine) were given for 3-4 days after which treatment was continued with one capsule of tetracycline and one tablet of 'Kynex' a day for several months. This cured 12 out of 21 patients with chronic pyelonephritis, and arrested further destruction of renal parenchyma in 4 cases which were complicated by renal disease; 5 patients who responded well at first relapsed shortly after antibiotic therapy was discontinued.

Acetazolamide for Glaucoma

DHURANDHAR, C. B. AND ALBAL, M. V. (*J. Postgraduate Med.*, **5** : 27, 1959) from the Department of Ophthalmology, K. E. M. Hospital, Bombay, treated 50 patients who had glaucoma with acetazolamide. Another group of 18 such patients who received other drugs served as controls. The patients were classified according to the symptoms and tension as acute congestive, chronic congestive, chronic simple and secondary glaucomas. In all acute cases except one the angle of the anterior chamber was blocked either by anterior synechias or by pigment in the trabeculas, as revealed by gonioscopy. Two patients with chronic congestive glaucoma also showed pigment in the trabeculas. The gonioscopic findings did not change after successful treatment with acetazolamide. The presence or absence of iridocyclitis could be determined by the use of slit-lamp microscopy. Results after therapy were assessed mainly by changes in the tension of the eyeball. Other criteria were improvement in vision, subjective improvement, and clearing of corneal oedema in acute cases. Patients with moderately severe cases

were given 250 mg. of the drug every eight hours, and those with acute cases received 250 mg. intravenously twice daily. No diuresis or serious side-effects were met with when this dosage schedule was used.

In most of the patients therapy with acetazolamide was followed by operation to prevent repeated attacks of glaucoma, in spite of encouraging results with the drug, because most of the patients attending free hospitals were likely to stop taking the drug after obtaining temporary relief. Only two patients with chronic glaucoma received acetazolamide for a period of four months. The drug was found to be useful in all varieties of glaucoma. All but 4 of the 50 patients showed a moderate or good response. The control group was treated with miotics, injections of 50 per cent dextrose, or both, and there were more failures than successes with this treatment (only two showed a good response). Operation had to be offered to these patients as a compulsory measure. In two patients with acute glaucoma in whom miotics had failed to control the tension acetazolamide brought about a dramatic reduction in tension. Of 17 patients with acute glaucoma 9 were treated with the drug and 8 with a combination of acetazolamide and miotics. These latter showed signs of relief earlier than the former in whom acetazolamide alone was used. Subjective relief was felt on the first day with disappearance of corneal oedema and reduction of congestion, while the tension came down gradually within a day or two.

In secondary glaucomas acetazolamide helped to reduce the tension and thus allowed the use of mydriatics. The drug was used preoperatively in nine patients who had glaucoma associated with cataract, five of whom showed good response. This made it possible to remove the cataract on the third day of treatment. The incidence of postoperative complications was reduced by controlling the tension before operation. As the therapy was not prolonged in any of the cases, no serious side-effects were noted. Some patients complained of dyspepsia, paresthesia, and numbness in the fingers and toes but these did not require discontinuing the drug.

CURRENT TOPIC

MEDICAL RESEARCH IN INDIA

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Medical research has not developed to the same extent in India as in some other countries. This is in spite of the fact that wide prevalence of communicable diseases in the country at the end of the last century and the beginning of the present one offered unlimited opportunities for research. The factors responsible were lack of trained personnel, absence of governmental initiative in providing opportunities and funds, and complete apathy of medical colleges and universities to development of research. With the attainment of independence and establishment of democratic government, the deficiencies in the activities in the field of medical research and in the provisions for medical research have been more and more evident. The 5-year plans have laid great emphasis on the promotion of national health. With the recognition of the crucial part that medical research plays in the promotion of health, a high premium has been placed on research in the plans for the country's development. Medical research in India is being reorganised on planned programme basis, and its scope expanded.

Historical Background

Before 1911 when the Indian Research Fund Association was created by the Government of India, there was no organised body to promote or coordinate medical research in India. Individual notable contributions were, however, made mainly by foreign medical men of the Indian Medical Service attached to medical colleges or all-India Institutes. In this connection, mention may be made of the work of Sir Ronald Ross in 1897 on the role of the anopheles mosquito in the transmission of malaria and of Haffkine on plague vaccine. Other contributions at this period were the works of Carter on spirillum of relapsing fever, and Lewis on trypanosomes. Macnamara and Cunningham's work on cholera, and Fayer's work on snake venoms were also valuable. During this period three research institutes were also opened—the Central Research Institute at Kasauli, the Haffkine Institute at Bombay, and the King Institute at Guindy. These were administered by the Medical Research Department of the Government of India.

The Indian Research Fund Association was established by the Government of India in 1911. Its aims were "to initiate, aid, develop and coordinate medical scientific research in India, to promote special inquiries and to assist institutions engaged in the study of diseases, their prevention, causation and remedy." The Association did useful work in spite of its limited resources. Such major health problems as malnutrition, rabies, plague, malaria, cholera, leprosy, and kala-azar were successfully tackled by workers whose researches were sponsored by the Association.

In 1946 the Government of India appointed a Health Survey and Development Committee for reviewing the whole field of medical research in India. The Committee made some pertinent observations such as "the almost complete absence of organised medical research in various departments of medical colleges; deficiency of trained personnel to undertake research; and progressively diminishing research activity of the specialised institutes in direct proportion to the increase in the volume of routine duties which these institutes have been asked upon to undertake." In order to remove the defects, the committee made certain recommendations, i.e., (a) the establishment of a centre for post-graduate training and research, (b) establishment of special institutes for research in specific diseases, and (c) creation of a statutory body for the purpose of formulating policies for the development of medical research in India, stimulation of medical research in universities, and selection and training of medical research workers in the country.

Indian Council of Medical Research—The most important step in the evolution of medical research in India was taken with the establishment of the Indian Council of Medical Research in 1949. This Council not only took over the functions of I.R.F.A., but has completely revolutionised the pattern and scope of medical research in India. The council derives its financial support almost entirely from the Government of India and functions in close association with the Ministry of Health.

The Council was created and is functioning at a very momentous period in the history of this country, the period of successive national Five-Year Plans when the nation has dedicated itself to unceasing efforts at raising the level of its socio-economic and cultural life. It is but natural that the Council should have completely reorientated its programme of research activities in this country to bring them in line with the nation's needs and aspirations. The objectives were defined in the Council's report on Medical Research in the Second Five-Year Plan:

1. "Strengthening of the facilities available for research in existing institutions in the country in order that they may render greater service than in the past in their special spheres of study.

2. "Creation of new Institutes for research in specific fields.

3. "Training of research workers by a system of fellowship and by other means.

4. "Providing opportunities for maximum display of talent of research workers by facing them with appropriate challenging situations;

5. "Creating conditions by the formation of a Research Cadre, by which young and promising workers may be attracted to a career in research and by which they may be induced to remain in research.

6. "Initiating research programmes for the solution of the many urgent problems in the fields of medicine and public health; and maintaining close co-operation with national and international agencies in all matters pertaining to research."

As a further step toward this reorganisation, the Scientific Advisory Board of the Council arranged a symposium in 1954 on medical research in relation to the second 5-year plan. This was attended by educationalists and research workers from all over the country. In the words of the Council's Director, "At this symposium the die was cast for a great forward movement in medical research, unprecedented in its history."

The Council controls its scientific and technical activities through its Scientific Advisory Board and the various Advisory Committees on which eminent research workers are invited to work. The Scientific Advisory Board and its Advisory Committees meet once a year. At this time they review the work of the various research projects, scrutinise the new proposals, indicate possible further lines of work, and recommend the grants. They also suggest future policies on various matters connected with medical research.

The efforts of the Council to reorganise the research pattern of the country and formulate a wider plan for future work have resulted in an inevitable expansion and reshaping of its programmes. An obvious result has been the increasing support to research projects by the Council in medical colleges, universities, research laboratories, and institutions. The Central and State Governments are also experiencing the effectiveness of the Council's policies through its co-operation in their public health programmes, and the common endeavour is bearing visible fruits in raising the health standard of the nation. The council has succeeded in making the advance of medicine a problem and a challenge for the medical student so that this activity is no longer confined to a few isolated institutions. The association of medical research with medical colleges is helping the country to lay bare its research potential by inducing an increasing number of medical graduates to devote themselves wholly to research. This has in turn led to increased emphasis on the training of research workers.

The Indian Council of Medical Research has also been able to get an increasing collaboration with international organisations in its efforts to create facilities for research, e.g., Rockefeller Foundation, the World Health Organisation, the Technical Co-operation Mission of the U.S.A., and the UNICEF. Establishment of the Virus Research Centre at Poona and provision of equipment to other virus laboratories in the country are examples of Rockefeller Foundation's help. Similarly, the W.H.O. has assisted the Council in its work on protein malnutrition, tuberculosis, and trachoma. The T. C. M. has played an important part in equipping medical colleges and providing funds for the training of workers abroad. The UNICEF has been very helpful in our programme of maternal and child health.

Research in Medical Colleges and Universities

Until recently medical research in India has been mostly confined to the few research and post-graduate teaching institutions. This was due to the fact that the States and the Universities in India have not effectively adopted the notion that medical colleges constitute their principal centres for research in basic and clinical sciences. In most of the medical colleges active scientific research was not encouraged, and no funds for research were available. The usual excuse has been that colleges are primarily for teaching only. This is just the opposite of the prevailing idea in scientifically advanced countries, where research is considered an integral activity of the medical colleges and a teacher, to command recognition, has to have research to his credit. The Bhore Committee mentioned two important reasons for this apathy of the colleges toward research: (a) ignorance on the part of the authorities of the importance of research in relation to the maintenance of a high standard of teaching and the development of the right attitude of mind in the student; and (b) insufficient personnel of the right type.

Prof. Bennet of Johns Hopkins University, who recently visited India, made some very important observations which could well be seriously considered by our State Governments and Universities: "Quite apart from advancement of knowledge, solution of problems, and the discovery of new facts, research is important in medical colleges because it serves as a constant re-

minder that medicine is not a changeless field. To participate in research is incumbent upon every medical teacher, for through it one develops the ability to accept one's own or another's observations with caution and to interpret critically what is published, demanding documentation and conceding nothing to authoritarianism or empiricism. This is what is generally lacking in faculty and in student in India today and only through research (not so called research-minded men) can this important lack be filled."

The universities in India, unfortunately, have not made their due contribution to medical research. This is primarily due to the fact that in this country the majority of medical colleges are run by the Government and these colleges are only affiliated to the universities. This has been one of the important reasons for indifferent promotion of fundamental research, since, by and large this is largely the domain of the universities. It is time that the Indian university, which with its responsibility for meeting the new and deep-felt intellectual needs of the nation, should step forward and accept the challenge offered by research, by setting capable workers at work in surroundings most adapted to fructify imagination. The following observation by the Canadian Royal Commission is pertinent: "To provide complete freedom to the individual worker to choose his path and to follow it without thought of practical results has been the pride of the universities in the past. Government laboratories with all their advantages cannot produce this special atmosphere." The necessity is felt more and more now, since there is increasing demand for science graduates in medical research projects.

The teaching institutes staffed with young and willing workers should be considered the right place to stimulate and organise research. The important thing to realise, when the research activities are being planned in this country, is that effective medical research can only be conducted in a teaching department with its resources of personnel, equipment, and clinical material. The colleges are likely to be a major source of original work and will also supply the country's future research workers. To achieve the basic necessity for promotion of medical research in the teaching institutions, it is necessary to consider this problem from three facets:

1. Appointment of whole-time staff and research workers in the medical colleges.
2. Selection of teachers.
3. Availability of adequate funds and the methods of their disposal.

In most of the medical colleges at present, it is only the pre-clinical staff which is whole-time, and this is the reason why any original work that comes out of these institutions is in basic sciences. However, most of us feel that the growth of scientific knowledge has progressed to a stage when clinical research can be developed. There is a tremendous unexplored clinical field in this country, and a substantial penetration by systematic scientific research is overdue. This would ultimately depend upon the number of whole-time clinical departments in the medical college. It is, therefore, the first essential in any planning of research that both the pre-clinical and clinical departments should have whole-time staff and clinical research workers. In the universities where it is considered not feasible to stop the private practice of clinical staff, some whole-time teaching units and research units should be created. The staff in these research units should be of the same status as the staff of the teaching units.

Another aspect of the problem to be considered is that most of the medical colleges are under-staffed, and the available staff is overburdened with routine duties. Many who would like to do research, cannot. The teacher in an Indian college has multifarious duties to perform. He has to do teaching, hospital service, and administration (including committee work). He cannot avoid these three things. If he now finds time he may do research. Increase in the personnel is to be seriously considered.

Still more important is the selection of the teachers. Great emphasis should be laid on the research to their credit, on the value and originality of their discourses, and no funds should be spared to secure them. Oratory aptitude or the results of competitive examinations should not be decisive factors. The unfortunate tendency in this country to spend money on huge buildings and costly equipment, at the same time grudging to pay a decent salary to staff, should be combated. A make-do research worker will do nothing of any worth, even if he has at his disposal sumptuous laboratories and huge funds. It is necessary at first to spare no funds to secure the right people and then to provide them with the necessary laboratories and the funds for real research. The recent suggestion of the Government of India to organise an All-India Cadre of whole-time medical personnel for the colleges with decent salaries and no differentiation between the clinical and pre-clinical teachers seems to me a move in the right direction.

Minutely linked with the problem of creation of whole-time teaching and research units staffed with people of right calibre is the question of funds for research and equipment at the disposal of workers. In most of the medical colleges no funds for research are available. In some, a few temporary posts of junior research workers have been created, but they have not been allotted funds to purchase their requirements. The result is that hey have either to spend from their own salary or to draw upon the already very meagre resources of the departments. The private sources of revenue are limited in the Indian universities, and, if the research is to be well organised, the State will have to subsidise this. The danger is that State subsidy has a tendency to impose restrictions on the liberty of the colleges and the individual workers. In any planning for increasing the research potential of this country, the question of improved financing (including volume of funds and devices for granting them) has therefore to be considered.

However, if large sources of money have to be made available to the universities for research, some sort of organisation is necessary to insure the correct utilisation of the funds. These have to be at the level of Centre, State, and the college. The Central Govern-

ment has realised that it has to play a significant role to stimulate medical research. This has resulted in the reorientation of the policy of the Indian Council of Medical Research toward university departments in recent years. It has set up research units, given grants to medical research workers, and awarded fellowships to medical graduates. The council has made another notable contribution to the promoion of research. Through its advisory committees, it advises and encourages the research workers in different fields and normally having different loyalties, to collaborate freely in co-ordjnated team work.

From time to time proposals are made to give grants to the colleges or universities and not to individual workers. The reason given is that grants to individuals is being criticised as favoritism toward them. We should not give in to such untenable criticisms from persons who lack the intellectual honesty of a research worker. The grants by the council are given on the recommendation of its advisory bodies composed of known research workers. On the oher hand, if these are left to the college heads, who need not be better teachers or research workers, official sanction of every article may be demanded, and an experiment may be held up for days because sanction of a reagent was not available due to college holidays. An investigator whose subsistence depends upon an unstable patch-work of categorical research grants is labouring under serious handicap. The research grants should have flexibility of administration, and the competence of the investigator for the responsibility of their expenditure should be acknowledged.

However, it is more than probable that the State Governments will insist on control on funds given by them. To meet this, establishment of State Research Councils and College Research Councils for decentralised research, as contrasted to research at national level organised by I.C.M.R., should be considered. These bodies should be given the greatest possible freedom to promote research. Proper development of medical research requires the participation of universities, colleges, and a special research organisations. Creation of State Research Councils will, to a large extent, bring about this collaboration. It will also help to keep out politics from research, which is absolutely desirable.

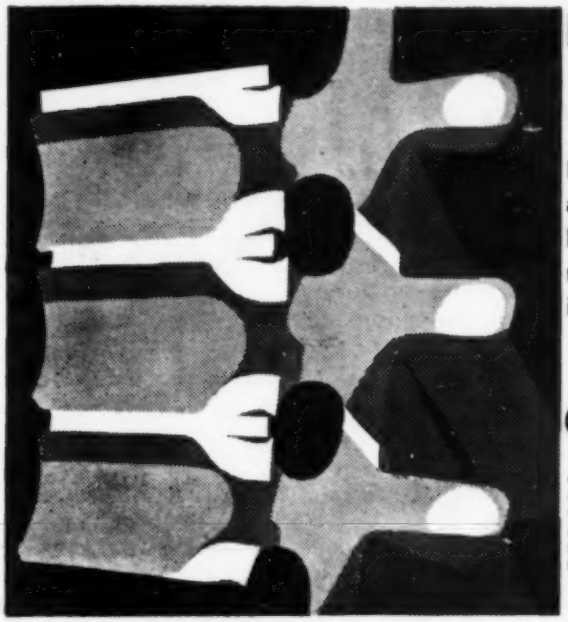
In spite of some of the inherent defects in our research planning we find that the scene is rapidly changing. Research is occupying an increasingly important place in Indian college activities. Several factors have contributed to this creditable improvement in the quantity and quality of research in the medical college within the last decade. The chief among them is the reorientation of the research programme in the country brought about by Indian Council of Medical Research. The adoption of the concept that association of research with teaching not only enriches teaching but helps in increasing the country's research potential and selection of future research workers has been the milestone in the development of research in this country. The Council is now consistently giving liberal research grants to individuals and collaborating research projects from the colleges. Some of the State Governments have also established their own Research Councils and provided funds for financing research projects. Though these are meagre, still it is a hopeful step in the right direction. Another factor that has made an effective impact on the young medical graduates is the holding of the annual meetings of the Indian Council of Medical Research in medical colleges. This contact of the young undergraduates and the junior staff with the research workers from all over the country has had the most galvanising effect in promoting research activities in the colleges. The Council has also undertaken another important step in promoting research in colleges, i.e., establishment of research units in some medical colleges, in order to give facilities to senior and recognised research workers, on an organised long-term basis. Lastly the I.C.M.R./Rockfeller Foundation fellowship programme, with the object of providing opportunities for higher training in teaching and research methods for the junior members of the staff, is bound to help provide the requisite personnel.

Research Potential of the Country

The demand for research workers far exceeds the supply in the country. Because of the fact that most training programmes in the colleges are designed to meet the university requirements for graduation, with practically no attempt to provide experience in the field of research, the shortage of research workers is understandable. There are many factors that contribute to this situation. I shall attempt to deal with a few which to my mind are not only important but, if remedied, will effectively contribute toward improvement.

The first and foremost to my mind is the defective medical curriculum in Medical Colleges. The programme of medical education should be so formulated that it takes into consideration not only the problem of how to produce a doctor, but also the responsibility of producing one who will be actively interested in the progress of medical research. This attitude has to be developed at the undergraduate level. This is part and parcel of the bigger research which is developed at the postgraduate level. Without this attitude there can never be correct initiation into original thinking, and the paths that one will travel in research may not lead to the desired destination.

Perhaps this is placing too high a demand on the average medical student, but some move can be made in the proposed direction if certain aspects of the present medical curriculum can be rearranged. The absence of an effective research programme for medical students, which would emphasise this important role of critical reasoning and evaluation in the study of disease and management of patient, is to my mind the most potent single factor responsible for the paucity of research workers. Any reorientation of medical curriculum should provide for an elective training programme, whereby the student can be provided with opportunities to perform experiments as a part of the curriculum, in order to emphasise the dynamic concept of disease. The student will thus get the opportunity to test his aptitude, and some with a strong positive bias are very



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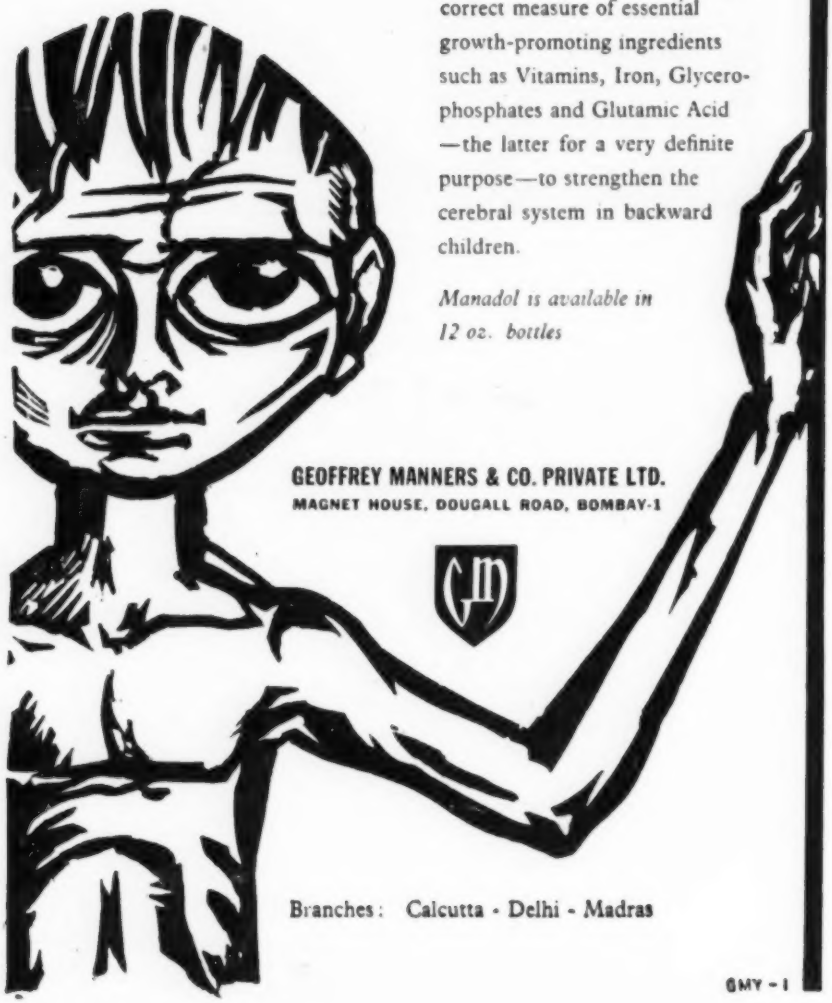

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likely to choose research as a career. The present curriculum of set lectures, demonstrations, etc., without giving any opportunity to the student to make discoveries for himself, is responsible for the present educational mould which does not allow sufficiently for individual variation.

Another important consideration that should definitely help more people to adopt research as a career is the institution of a training programme in experimental medicine. This should be provided both at the undergraduate and postgraduate level. This may be followed by a programme of research training at the beginning of the internship or residency and continued on an individualised basis to meet the particular interests of the trainee for a number of years. All residents and junior staff should be encouraged to do research. Outstanding accomplishments by the young research workers may be awarded by prizes, honours, or other recognitions. Better students may be encouraged to do research with staff members or provided with part-time employment in the departments to develop further interest.

The integration of teaching and research is thus desirable. This may vary from introduction of experimental methods in undergraduate teaching to the conduct of fundamental and clinical research by postgraduates. It is the stage when the medical man must be transfused with the spirit of scientific curiosity. If the supply of future research workers is to be insured, the undergraduates and postgraduates must be impressed that research is not limited to those with special aptitude but that initiative, diligence, and correct observation will permit them to take up serious investigative work.

Together with this replanning of the educational programme, we have to consider the ways and means which will aid in attracting good candidates to a career involving research. The academic institutions should establish more effective research and teaching programmes for medical students, interns, and residents. This would be helped by the establishment of full-time or part-time research and training opportunities for medical students and residents.

One of the greatest deterrents to serious research is the teaching and service load of the departments which the staff has to bear. It would thus be helpful if teaching institutions would establish financially attractive positions at all ranks in the departments in order that the teaching and service load may be effectively distributed to allow staff members more time for research. This would help in establishing a better balance between teaching, service, and research.

Creation of additional opportunities for career investigators would be another helpful step. There is a section of educationalists who think that the situation can be improved by establishing Research Professorships. I have my strong doubts if this is the correct solution, because this tends to provide only one man with the research opportunities which his colleagues wish they had. It is preferable to increase the number of professional staff and their technical personnel in keeping with their teaching and service responsibilities and thereby afford more opportunities for research to all. A staff composed of stimulating men with talents both in teaching and research will win prestige for the department, a type of prestige so essential for good recruitment. Teachers lacking in these personal qualifications, even though they have good minds for research, are not suited for teaching institutions. Their specialised talents should be better utilised in research institutions.

The greatest responsibility, however, falls on those who advise in selection of teachers. They should recognise the importance of quality standard. Unfortunately, the hospital service load on the departments is so much that more often there is no choice in selection, and appointments are given on the basis of availability, even though the applicants are misfits. I would strongly urge that the head of the department should have the courage of his convictions and must be prepared to have certain positions temporarily unfilled, rather than to fill these with men of inferior calibre. This is only possible if the professor is the recruiting agent for his department which is, however, a rare thing in this country. The usual practice is that the Deans, Principals, or Government do not even invite suggestions from the Professor nor appoint him as an adviser to this selection board.

Lastly, we must try to understand the viewpoint of the research workers. There are many difficulties for a young research worker in this country. Unless the salaries of the research posts are improved, it is very difficult for a young medical man primarily groomed for a lucrative clinical career, to choose research as career. This economic factor I feel is the most potent deterrent to the active research programme of a university department—more so because in research he loses all the human touch, being confined within the four walls of his laboratory especially in nonclinical subjects. It is very seldom that at present he gets an appreciative audience in medical colleges, which could feel happy about his contribution to fundamental sciences.

Most of the research posts are non-teaching jobs, and for all permanent teaching jobs, teaching experience rather than research experience is considered, with the result that, when his temporary tenure of research appointment finishes, the research scholar is no better suited to start his academic career than he was at the beginning of it. Owing to his temporary appointment he also can not avail of any foreign research fellowships for further study, which even the junior but permanent staff may get, since these grants require somebody to stand for re-employment of the person concerned. It is suggested that improved salary and the inclusion of a teaching programme which will be recognised by Public Service Commission, along with provisions for further study, would help in these manifold problems.

Admittedly, the increase in research potential is a multifaceted problem. It is a problem of making the career of research workers more attractive, and this is the responsibility of the universities and the Government. There is the problem of selection of the right type of personnel for departments—finding a square peg for the square hole. This is again for the universities, Government, and Public Service Commissions. Here

the head of the department should have the major voice. Finally, there are the economic problem connected with a long training period and the provision of a permanent well-paid research cadre. All these aspects have to be tackled simultaneously before the medical graduates can be attracted to adopt a research career in this country.

Present Achievements and Future Plans

In viewing the achievements one has to admit that these have been more in planning than in results. This has to be considered with the background of existing conditions, i.e., limited finances, paucity of trained personnel, and teachers overburdened with routine duties, etc.

During this plan period the main emphasis has been on applied research, the results of which could be immediately applied to the betterment of the nation's health. Study of communicable diseases, malnutrition, environmental hygiene, and other health problems have been the major preoccupations. The control programmes against malaria, filariasis, trachoma, tuberculosis, leprosy, plagre, schistosomiasis, etc., are examples of applied research which has occupied the attention of research workers. Though it has to be admitted that fundamental research has been relegated to a second place, still the basic laboratory research and the applied research are so interdependent for successful progress and production of effective results that the former was encouraged whenever deemed necessary. In any future plans applied research will still have to be given priority.

In the planning of research, the outstanding contribution has been of the I.C.M.R. In the words of its Director, "medical research is no longer confined, as in the days of the I.R.F.A., to a few research institutes which are for the most part situated in hill stations, usually out of contact with the large teaching hospitals. It has been brought to where it belongs—to centres of teaching and learning, to centres where there is a wealth of clinical material and where opportunities of study of human afflictions abound."

A number of research units manned by full-time personnel have been established in medical colleges, *i.e.*, Liver Diseases Research Unit at Agra, the Neuropathological Unit at Bombay, the Nutritional Research Units at Bombay and Calcutta, the Clinical Research Units at Calcutta and Bombay and the Neurophysiology Unit in Delhi. Besides, eight drug research units, five long-term projects for the study of atherosclerosis and hypertension, and five therapeutic trial units are being organised. This is in addition to short-term grants which workers in practically all the medical colleges are receiving. Besides the above, an Industrial Health Research Unit has been established at the All-India Institute of Hygiene and Public Health, Calcutta, Haematological Research Unit at the School of Tropical Medicine, Calcutta, Drugs Research Institute at Jammu, Mental Health Institute at Bangalore, and a Blood Group Reference Centre at Bombay. The establishment of the following three new institutes is under consideration: Institute of Biology, Institute for Research in Occupational Health, and a Virus Research Institute.

Research Cadre

Together with the provision for increasing physical facilities, it is being realised that conditions of the research workers must be improved and the scientist should be assured security of service. The present terms of service and emoluments offered to the research workers are so inadequate that these will not attract good men to a research career or retain them there. Research is to be carried on by full time officers, adequately paid and permanently employed. It is heartening to note that the Planning Commission of the Government of India has accepted the idea of a cadre of medical research workers. The following are the basic features of the Cadre[1].

1. The cadre must be sufficiently broad-based to meet the growing needs of modern research and consist of representatives of all fields of medical science including biophysics, statistics, epidemiology; it must be so constituted as to be capable of tackling any health problem that the country might be faced with;

2. The cadre must be flexible; there must be provision for adding personnel to it as and when suitable talent is available.

3. Irrespective of the field in which a person may be working, there should be opportunities for promotion on the basis of the quality of work done by him; and

4. An intimate association must be secured between members of the teaching and research cadres.

With the paucity of personnel trained in research techniques, the creation of research cadres will not be the whole answer unless positive steps are taken for training of research workers. This is an essential function of any research organisation, and the Indian Council of Medical Research and the State Research Councils have to give this problem a concrete shape. The former have adopted a definite programme of training of medical research workers by instituting fellowships for young scientists and research workers under suitable direction. For the last few years this programme has been modified to include the junior teachers in medical colleges also and is being partially financed by the Rockefeller Foundation. This re-orientated ICMR/RF fellowships programme has the following objectives:

1. Training of teachers and research workers for medical college staff with emphasis on research as a component of good teaching.

2. Aiding the development of certain departments in medical colleges as post-graduate training centres through providing them with able young doctors in training, who would assist in their teaching and research programmes.

3. Improving the value of and the respect for Indian medical qualifications. Foreign post-graduate training, now so largely relied upon, can never meet the quantitative needs for competent medical teachers in India, nor is training abroad under totally different conditions

[1] I.C.M.R. A Review of Activities during the year 1950-57.

the best preparation for a medical or scientific career in India.

Another worth-while step would be to arrange refresher courses for research workers and teachers, in specialised research laboratories. It is desirable that such courses should be extended to training in research techniques and the use of research equipment. Training in epidemiological research should also be given utmost consideration.

Division of Experimental Medicine in the Medical Colleges

It has often been debated as to the best way research, both applied and fundamental, can be encouraged. Suggestions have been made for establishing special research institutes for the purpose. No one will deny the usefulness of such institutes, but the question has to be considered vis-à-vis the country's resources. The consensus is that if such specialised institutes have to be developed, they should be organised within the universities, and every effort should be made for a very close collaboration between the university departments and the research institutes. It would, however, be more economical and useful if instead of one or two such institutions, several research units are created in the existing medical colleges. The institution of special departments of experimental medicine or of research medicine should therefore be seriously considered. The Indian Council of Medical Research is thinking along these lines. Most of the colleges lack accommodation, equipment, and the necessary staff to create such divisions on their own. Funds will have to be provided for building, equipment, and maintenance of technical and research staff. With the provision of such units research programmes, especially in the clinical departments, will make a certain headway. It would also be necessary to have a special ward earmarked for research beds, well equipped for clinical research programmes. However, the success of such research divisions will depend upon stability of the position of the research staff, intellectual opportunity and freedom, availability of physical facilities, and a good salary standard.

Scientific Information Service

In any plan for expansion of medical research in this country, the easy access to scientific information is imperative, especially when the libraries in the medical colleges are not adequately supplied with books and journals. The Indian Council of Medical Research is seriously considering the establishment of a centre for the collection, correlation, and dissemination of scientific information. At the Baroda symposium a suggestion was made for the creation of a research intelligence unit to review concurrent research programmes in other parts of the world and to make this information available to workers in India. It was envisaged that such reviews, besides abstracting the work already done, will also provide a critical analysis of the data in order to insure their intelligent applicability by the workers on similar problem. It is possible that the World Health Organisation will collaborate in this project.

Study of Rural Health Problems

It is the essential aim of all health programmes that these must be organised to fulfill the needs of the people. The total population of India is about 390 million, 82 per cent of whom live in 558,089 villages. It is therefore obvious that all our efforts to improve the health standards of the nation should be primarily directed toward the villages. The structure of health services to be provided there will obviously be very different from urban requirements. A concentrated study of the pattern of diseases in the rural areas will mean a parallel study of the mode of life of people there, including their economic standards. An accurate knowledge about the vital statistics of the village population is another important study.

The Indian Council of Medical Research has supported field studies to ascertain the actual neonatal and infant mortality rates in rural communities. An interesting study, under the combined effort of the Government of India and the Harvard University is in progress in Punjab, to investigate the population dynamics of the inhabitants in the Khanna area. Such studies should be further extended in other areas to get the birth and mortality data, main illnesses and their causes, etc. The knowledge gained will be really helpful in planning for medical care in rural areas. There is a proposal to extend similar studies to tribal areas.

Research in Indigenous Drugs

There is no getting away from the fact that indigenous medicine still plays an important role in the life of Indians. The Government has recognised this and has opened a large number of Ayurvedic and Unani dispensaries in the rural areas and also a number of colleges of Indian medicine. It has been a constant argument whether practitioners of indigenous systems of medicine should be permitted or there should be only one system of practice of medicine in India, i.e., modern medicine. While no one denies the established value of modern medicine and the desirability of its benefits being available to as large a section of the population as possible, yet a powerful force backing the indigenous system is Indian nationalism. During the present period of transition, when the nation is so conscious of her cultural heritage and is trying to revive her past glory, the demand for the recognition of the indigenous system is understandable. It is further argued that the Ayurvedic system may not provide a cure for all maladies, but this is no reason why it should not be used to deal with ailments in which it has proved to be efficacious, especially when it is considerably cheaper.

The Central Government in 1954 expressed its views as follows: "Since the existence of several systems of medicine in the country was a source of confusion, Government felt that only one system of medicine should be recognised, although contribution from other systems could be profitably incorporated." With this aim, research in indigenous drugs is being encouraged. The establishment of drug is being encouraged. The

establishment of drug research units in medical colleges, the Central Drug Research Institute at Lucknow, the Indigenous Drug Research Laboratory at Jammu, and the Central Institute of Research in Indigenous Medicine at Jamnagar, are examples of Governmental effort to help to discover the innumerable remedies of therapeutic value in this system of medicine. In addition, a good number of pharmacologists are given yearly grants for indigenous drugs inquiries. As the drug research programme expands the demand for clinical trials of these drugs will also increase. The I.C.M.R. is proposing to establish therapeutic trial units in certain teaching hospitals.

This programme will not only help to provide effective drugs to the public at a cheap price but will also help in the achievement of the country's goal of self-sufficient in drugs. If *Rauwolfia serpentina* (Chota chand), the drug now widely acclaimed in the treatment of hypertension, can be investigated in India by Indian workers, why not others? Some other indigenous drugs on which research is being carried on are *Azardirachta indica* (Nim), *Leea hirta* (Kakajangha), *Cassia absus* (Chaksu), and *Adhatoda Vasaca* (Adulasa) for their antibiotic principles; indigenous plants like *Alpinago langa* (Beri pankijar) and *Acorus calamus* (Bach) are being studied for anti-tuberculosis properties. These are only a few of the large number of indigenous drugs that are being given a scientific appraisal.

Another important step that is being considered, and is being adopted as and when finances permit, is to create a chair of the History of Medicine in the medical colleges, so that students of modern medicine will have an insight into the systems of medicine practised in this country at a time when the so-called modern medicine did not exist. This is a very useful idea as a middle course between the demand for integration of modern and indigenous systems on the one hand and no recognition of indigenous system on the other hand. In the words of Sigerist "This would permit us to preserve and to incorporate into our scientific system of medicine whatever is found to be of value in this indigenous system. And it would also permit the objective refutation of claims that are not justified.

Concluding Remarks

It will be seen that medical research in India has struck a stride and reached a phase in its growth assuring continued development. The most spectacular achievement has been the response of the medical intellect as a result of the demands made upon it by the changing circumstances of an independent country. In particular, the desire to raise the standard of national health has greatly accelerated the pace at which demands are coming from workers in the fundamental and clinical sciences for financial support of their ever-increasing research projects.

It is something to our credit, and very heartening to observe, that the Union and State Governments and the Universities are willing to meet the challenge with unrecorded vigour and freshness of approach. It will take some time before the impact of the research effort in the country in furthering human welfare will be fully appreciated by the general public. To my mind, however, this is the least important aspect of the problem. More important is the fact that medical research in India today is being pursued with a spirit of selfless and unself-conscious dedication to the problems in hand.—*The Journal of Medical Education*, August 1959, Volume 34, Number 8, pp. 745—756.

NOTES AND NEWS

The World Medical Association

The Council of The World Medical Association announces the appointment of the following Regional Secretaries :

Asia : Dr. Munawar Ali—Pakistan; *Europe* : Dr. Marcel Poumaillous—France; *Latin America* : Dr. Hector Rodriguez H.—Chile; *North Pacific* : Dr. Yushichi Minamizaki—Japan; *South Pacific* : Dr. John G. Hunter—Australia.

The Pacific region was recently divided in order to facilitate the work of the Regional Secretary. The National Medical Associations of China (Nationalist), Japan, South Korea, the Philippines and Viet-Nam have been designated to form the North Pacific Region. Corresponding Secretaries appointed by Council include :

Dr. Taha Baashar—Sudan Medical Association; Dr. F. T. Sai—Ghana Medical Association; Dr. A. H. Tonkin—Medical Association of South Africa.

The General Assembly of The World Medical Association directed the Council to appoint a long-term Study Committee to investigate the future objects and affairs of the Association. Council announced that this Committee would have the following personnel :

Dr. L. A. Hulst (Netherlands), Chairman; Dr. Munawar Ali (Pakistan); Dr. S. Wand (U.K.); Dr. Norman A. Welch (U.S.A.); Dr. Felix Worre (Luxembourg).

U. S. Mission Grants 5·6 Crores to India

India's malaria eradication programme lately received a grant of Rs. 5·6 crores from the U.S. technical Co-operation Mission for the purchase of over 17,000 tons of DDT for this year's spraying requirements.

The new agreement, brings the total U.S. dollar contribution to the eradication programme to more than Rs. 29·2 crores. This is in addition to a rupee grant of 8 crores made earlier this year.

The present agreement was signed by Mr. C. Tyler Wood, the new U.S. Minister for Economic Affairs and Director, T.C.M. and Mr. A. K. Roy, Secretary, Ministry of Finance, Department of Revenue and Economic Affairs.

The National Malaria Control and Eradication Project was initiated seven years ago and is aimed at eradicating malaria from India and affording full protection to the entire nation within the next few years.

WHO to Undertake Investigations into the Incidence of Smallpox in India

The World Health Organisation is, at the instance of the Government of India, undertaking an investigation into the incidence of smallpox in India.

This is in pursuance of the Union Government's move to prepare an integrated programme for total eradication of smallpox scourge in the country.

Two research workers of WHO—one from Liverpool and another from America—will shortly arrive in India to start the proposed investigation at the King Institute, Guindy (near Madras), which is a pioneer in manufacturing vaccine in India.

The Union Government have asked the State Governments also to prepare schemes for tackling smallpox epidemic in consultation with expert committees at State level.

Family Planning Day

The Central Family Planning Board has decided that 18th December, 1959 be observed throughout the country as the Family Planning Day. In view of the alarming rise in the population of our country, the sponsors desire that all sections of the people and organisations like the Indian Medical Association should co-operate with the Central and Statie Governments in the implementation of the Family Planning Programme which has been taken up by the government.

Drugs Act to be Amended

The Government of India propose to amend the Drugs Act to make imprisonment compulsory in case of conviction for the manufacture and sale of spurious drugs. It is also intended to further amend the Act to enable the Union Government to issue directives to State Governments in the interests of bringing about uniformity in its implementation.

Mr. V. K. B. Pillai, Secretary, Union Ministry of Health, made these points during the session of the Fifth Drugs Conference which met under his chairmanship on 5-11-59.

The Conference had a prolonged discussion on the maintenance of registers and cash memos under the Act. Representatives of the trade and industry felt that a good deal of unfruitful clerical labour was involved in keeping the records under various sub-rules of the rules made under the Act. They urged a reduction of their number and suggested the setting up of a committee to go into the matter.

Surgical Ward for Hindu Rao Hospital, Delhi

The Delhi Corporation, at its meeting held recently sanctioned a proposal to construct a 100-bed surgical ward in Hindu Rao Hospital at an estimated cost of Rs. 7,48,000.

After the construction of the new ward within a period of 15 months, Hindu Rao Hospital would become a premier hospital of the Capital. The hospital had also recently been recognised by Delhi University for post-graduate studies.

Health Scheme for Delhi

An ambitious health insurance scheme is expected to be launched in the Capital from December 1 by the Delhi Medical Association.

It is reported that nearly 250 medical practitioners of Delhi and New Delhi had offered their co-operation to run the scheme and they would be on the panel of doctors from among whom the insured would be free to choose any one for consultation and treatment. The management of the Tirathram Shah Hospital, Rajpur Road, has offered to reserve beds for the people insured under the scheme. A Connaught Circus nursing home and some other nursing homes have also extended their co-operation.

The insured would be able to consult specialists and secure clinical assistance in several zones of the Capital, thus eliminating the trouble of going to a centralised place.

The fees will be Rs. 55 per year per head for consultation and treatment as and when necessary. This will not include hospitalisation for which an additional Rs. 20/- per annum will be charged.

The charges for insuring a family will be Rs. 100,. which will include consultation, treatment and hospitalisation. A family will include husband, wife, and non-earning minor children.

Indian Pharmaceutical Congress

The XIIth Session of the Indian Pharmaceutical Congress will be held at Ahmedabad from Wednesday the 30th December, 1959 to Friday the 1st January 1960. The programme will include the reading of scientific papers under the following sections: Pharmacy, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology and Pharmacy of Indigenous Medical Systems. Two symposia on the Training of Pharmacists under the 3rd Five Year Plan and The Role of Pharmacists in the Health Insurance Schemes will be additional features of this Session. Further information may be obtained from the hony. general secretary, I.P.C.A., 2 Heysham Road, Calcutta-20.

Health Conditions in India during September

Based on the available data, births and deaths registered in towns with a population of 30,000 and over, during August, 1959, were 31 and 13 per thousand of the population respectively as against 25 and 11 during July, 1959.

According to the available information the country remained free from plague. Cholera and smallpox, however, continued to be reported from some parts.

Preliminary reports for the week ended September 26, 1959, show that the situation regarding cholera and smallpox was as follows:

Cholera: Mild incidence was reported from the districts of Srikakulam and West Godavari in Andhra Pradesh: Gohilward district in Bombay State; Lucknow district in Uttar Pradesh; the districts of Bankura, Howrah and the Calcutta city in West Bengal; and the districts of Gaya, Monghyr and Hazaribagh in Bihar.

Smallpox: Heavy incidence was reported from Madras city. Mild incidence was reported from Madurai,

Tanjore, Salem and Coimbatore districts of the State. Mild incidence continued to be reported from the districts of Srikakulam, West Godavari and Guntur in Andhra Pradesh; the districts of Mandya, Bellary, Bijapur, Dharwar and Belgaum in Mysore State and Pondicherry. Mild incidence was also reported from the districts of Anantapur and Chittoor in Andhra Pradesh; Ahmednagar, Greater Bombay and Sholapur districts in Bombay State and the district of Chhindwara in Madhya Pradesh; Sundergarh and Baudh in Orissa; Ambala district in Punjab State; and Burdwan district in West Bengal.

Kyasanur Forest Disease : During the fortnight ended September 12, 1959, six attacks were reported from Shimoga district in Mysore State as against five cases during the previous fortnight.

Gastro-enteritis : Forty-six cases and eight deaths were reported from Uttar Pradesh during the week ended September 19, 1959, as against 91 cases and 29 deaths during the week ended September 12, 1959, and 57 cases and 13 deaths during the week ended September 5, 1959.

Influenza : During the month, influenza epidemic was reported from South Wyanaad (Kerala). Two hundred and forty cases and eight deaths were recorded. Treatment centres are being established in the area.

REVIEWS

A Way of Life and Other Selected Writings of Sir William Osler, with an Introduction by Dr. G. L. Keynes, Dover Publications, Inc., New York, 8" × 5¼", pp. 278; price $1·50.

To the present generation of doctors Osler is a legend who wrote a classical text-book on medicine which like all classics is highly spoken of but rarely read. This handy paperback is a reissue of *Selected Writings of Sir William Osler* published by Oxford University Press, 1957. Sir William Osler was not only a great teacher and a superb clinician, but also an erudite scholar in the humanities and classics and a man who had the gift of inspiring. His speeches and writings had a stimulating quality that endures even to this day. This collection of speeches and essays selected by a Committee will serve to introduce Osler as a humanist and essayist not only to young doctors and medical readers but to all else who still value scholarship and cherish good writing. It will be of little use to expand on the individual pieces brought together in this volume, for each has to be read, re-read and pondered over.

Chemotherapy : A Symposium —Central Drug Research Institute, Lucknow, 8¼" × 10¼", pp. xi+176.

This book contains a collection of papers that were presented at a symposium held in November 1958 at the Central Drug Research Institute, Lucknow.

As one of the National laboratories under the Council of Scientific and Industrial Research, it is appropriate that Dr. B. Mukerji, Director of the Institute felt the necessity of organising the symposium. From the papers presented or read at the convention, it appears that all the major aspects of chemotherapy were discussed. Not only papers on chemotherapy of interest to this country, viz., cholera, tuberculosis, leprosy, dysenteries, filariasis and malaria were presented, several notes on specialised research bearing on the subject have also been included in the collection. It is heartening to find that almost all of the important research institutions or laboratories participated in the conference. Papers contributed by Prof. Thacker, Drs. Khanolkar, Dhar and Krishna Murti are a special feature of this publication.

We must congratulate Dr. B. Mukerji for organising the symposium and for presenting us the publication which can be considered a valuable addition to the scientific literature of this country.

The get-up and the printing are good; the reproduction of x-ray plates should have been better.

Manual of Differential Diagnosis —By William C. Matousek, The Year Book Publishers Inc., 200 East Illinois Street, Chicago, 1959, 7¼" × 5¼", pp. 352, price $8.00.

This book mainly deals with differential diagnosis on the symptom basis. Symptom have been arranged alphabetically, and each one's aetiology has been classified from a practical point of view. Thereafter details have been described, which though short are comprehensive. A good book for both students and general practitioners.

Cardiac Arrest and Resuscitation—By Hugh R. Stephenson, Jr., The C. V. Mosby Company, St. Louis, U.S.A., 1958, 9¼" × 6¼", pp. 378, price $12.00.

This book deals entirely with sudden cardiorespiratory failure and methods of resuscitation. Much of the conclusion is based on the results obtained from 1700 case studies and certain experimental procedures. The book not only deals with cardiac arrest in surgery and anaesthesia, but various other common conditions also a medical practitioner may face. The book is therefore suitable for surgeons and anaesthetists as well as for general practitioners.

Cardiovascular Sound in Health and Disease—By Victor A. McKusick, The Williams & Wilkins Company, Baltimore 2, Maryland, U.S.A., 1958, 10¼" × 7¼", Pp. 570+xii, price $15·00

An excellent and comprehensive monograph. The monograph contains nine sections. Starting from an historical survey, a progression from general and basic considerations to specific subjects has been described under other different sections. Sections six to eight make the book more interesting and informative. Inclusion of separate sections dealing with cardiovascular sounds in animals and lung sounds and a very short section of one page on miscellaneous sonic phenomena are good departures from the routine ways. Section nine, that of technical appendix, has been dealt with in a manner which assumes that cardiologists are also good physicists. The book is well produced.

The Chemical Prevention of Cardiac Necroses –By Hans Selye. The Ronald Press Company, 15 East 26th Street, New York, 10, N.Y., U.S.A., 1958, 9" × 6". pp. 325+ix, price $7·50.

This is a monograph meant for those who are interested in experimental medicine. The author has tried

to explore the relationship of actions of steroids and electrolytes in the production of myocardial necrosis in animals. The experimental approach is on the basis that the electrolytes and the hormones, without producing diseases, may so condition the body's response that non-specific noxious agents can cause morbid changes. In spite of certain similarities in the nature of cardiac muscle necrosis produced or prevented experimentally, one hesitates to accept, that the results will be the same in human beings.

The Year Book of Drug Therapy, 1958-1959—Edited by Harry Beckman, The Year Book Publishers Inc., 200 East Illinois Street, Chicago, 7½"×5", pp. 569, price $7.50.

This volume conforms to the usual standard of the series. The section on cardiovascular diseases weighs heavier than any other. The reviews are uptodate and helpful.

An Atlas of Surgery—By F. Wilson Harlow. Published by William Heinemann Books Ltd., 99, Great Russell Street, London, W.C. 1, 12½"×7½", pp. xiii+363, price 50s. net

This book is a successful attempt to show the steps of some of the operations in surgery. It may be adequate for the undergraduates. But surgery is not only the steps of operations. The insertions are too meagre. The photography is excellent. This work has really become a good refresher for those who had already grasped the subject.

Zur Begutachtung der Blutkrankheiten —Von Prof. Dr. O. Fresen, Düsseldorf, Prof. Dr. H. Begemann, Freiburg/Br. und Dr. H. Merker, Freiburg/Br. Mit einem Vorwort von Oberreg.-Med.-Rat Dr. E. Geotz, Bonn 1959. VIII, 142 Seiten, 16 Abbildungen, Gr.-8°, (Georg Thieme Verlag, Stuttgart), kartoniert DM 19.50 (Arbeit und Gesundheit, Heft 70).

Expert Opinion on Blood Diseases—By Prof. Dr. med. O. Fresen, Düsseldorf, Prof. Dr. med. H. Begemann and Dr. mer. H. Merker, Freiburg/Br. Pp. 142, 15 illustr. (in German) Price DM 19.50.

In the course of the post-war years it became clear that so little was known about the causal connection between trauma, the various effects of war service, the damages suffered in P.O.W. camps and haematological diseases, that the German Ministry of Labour and Social Order intiated special investigations into these correlations to get a scientific basis on which to decide claims for compensation of war victims and P.O.W.s. Prof. Fresen supplied a brilliant pathological analysis of every aspect of haematology with special reference to possible effects of damages suffered due to war service or imprisonment on the development of diseases of blood and haemopoietic organs. He concludes that in osteomyelosclerosis, in Boeck's sarcomatosis and in Hodgkin's disease external factors might well be recognised as contributory, whereas blood cell proliferations, such as acute and chronic leukaemias are to be considered as neoplastic diseases, for which a viral aetiology in man has not been proved yet.

In the second half of this book Begemann and Merker consider clinically blood diseases as sequelae of external damaging influences or particular environmental factors. The present legislation requires only that a probability of 50:50 be adduced for a connection between damage and disease. From this point of view the authors consider pernicious anaemia; posthaemorrhagic blindness; Hodgkin's disease; leukaemias as sequelae of an accident, of ionising radiation, benzol and infection; osteomyelosclerosis; consequences of splenectomy, and Banti's disease. The conclusions drawn at the end of every section are well reasoned and a mine of information for every one who has to deliver expert opinions on these subjects. There are many references to the world literature at the end of each of the two sections. Many excellent microphotos illustrate the pathology part.

OBITUARIES

Dr. H. G. Patel

Dr. Hargovindas G. Patel was born in 1899 at Nadiad, District Kaira. He graduated from the Grant Medical College, Bombay, in 1924. In 1925, he settled in Bombay for independent practice and soon became one of the leading practitioners of the town.

Dr. Patel was very social and of genial temperament. He was an old member of Indian Medical Association, Society for the Study of Industrial Medicine, Grant College Society and Bombay Medical Union. He took a leading part in building up the Bombay Branch of the Society for the Study of Industrial Medicine (India). He was President of the Bombay Branch, I.M.A. for the year 1954-55, and a Central Council member for 1955-56. He was the Hon. Secretary of Bombay Medical Union for 1954-55 and 1955-56. He was elected President of Bombay Medical Union in 1958-59. The Bombay Medical Union celebrated his platinum jubilee in December 1958 very successfully under his austere presidentship.

He served as Industrial Medical Officer of a well known group of textile mills and factories (Mafatlal Group) for about 25 years. Dr. Patel was also the Chief Medical Referee of a leading Assurance Company before the Government started the Life Insurance Corporation.

Dr. Patel succumbed to an attack of coronary thrombosis on Saturday, the October 24, 1959. He was a member of the Indian Medical Association till his death and the Association mourns his loss.

Dr. G. P. Barua

Death occurred in London on the 7th October, 1959 of Dr. Ganga Prasad Barua, an Assamese doctor, who attained great heights as a medical practitioner and established a very successful medical practice in London since 1932. He died of coronary thrombosis in Saint Bartholomew's Hospital, London He was 59.

Born in a respectable family of Assam, Dr. Barua had a brilliant academic career. He topped the list of successful candidates in Intermediate Science and M. B. examinations of the Calcutta University. He was

DR. H. G. PATEL

DR. G. P. BARUA

also a keen sportsman. His contributions to the social and cultural life of Assam towards the early twenties were considerable. He strived hard to bring the theatrical talents of the Assamese youths of his time to the fore and was himself a notable artist of the Assamese stage. In 1929 he proceeded to London and qualified as a Licentiate of Royal College of Physicians, Member of Royal College of Surgeons and as a D.O.M.S. (LOND.). His distinctions as a doctor helped him to establish a successful medical career in London where he had panel practice with both English and Indian doctors to assist him.

He was elected the Secretary and later on as the President of Indian Medical Association in London, which position he held to the end of his life. He was also the President of the Assamese Students Association in London and in this capacity was of immense help to the Assamese students in London.

YOUR QUESTIONS

Correspondents should give their names and addresses (not necessarily for publication) and include all relevant details of the questions which should be typed. Questions of medical interest only will be accepted for this section. They should be sent in a separate envelope marked "Your Questions". Questions of general interest will be published in preference. Lack of space precludes answering all the questions received.

ED.—*J. Indian M. A.*

Alopecia

Q. We have got a few scientific armaments at our disposal to treat alopecia. We have tried various medicines but with no avail. May we invite a suggestion for the best treatment of alopecia?

Ans. The cause of alopecia is to be carefully investigated for any local or general condition. The loss of hair may be total, diffuse or localised. Total loss of hair may be congenital or due to glandular deficiency. Diffuse loss of hair may be due to senility, heredity, debilitating disease, seborrhoea capitis or some general skin disease. Localised (patchy) loss of hair may be due to syphilis, folliculitis, fungus infection of the hair and skin, trophic disturbances of alopecia areata.

The treatment may be outlined as follows:

1. If any cause is found it should be treated.
2. Assure the patient that hair will grow again (except when due to senility or heredity).
3. General health is to be improved by nourishing food and vitamins.
4. Septic foci in teeth, tonsils, sinuses, or in any other place are to be removed.
5. Locally:
   (i) Application of lotions, paints and ointments containing rubefacients, e.g.,
   ℞
   Acetic acid—30 m;
   Solution of cantharidin (B.P.C.)—30 m.
   Spirit—120 m.
   Aqua dist.—to 1 oz.
   Fiat lotio.
   (ii) Sterilised milk may be injected intradermally at 10 to 15 days' interval.
   (iii) Local and general ultra-violet therapy may be given.
   (iv) Friction and massage of the affected parts may be advised.

Legal Implications of Vasectomy and Ligation of Fallopian Tubes

Q. Sometime back it came out in the columns of *The Amrita Bazar Patrika*, Calcutta, that the Indian Penal Code prohibits ligation of fallopian tubes (sterilisation) if the same is done in cases where there are no medical indications.

I understand that the above operation is now being done fairly extensively throughout India for socio-economic reasons (family planning). I further understand that some State Governments in India are encouraging this operation even by offering remunerations.

Kindly let me know the exact legal position as it is today in respect of this operation if it is done for family planning purpose. In this connection, the legal implications of vasectomy for the same reasons may please be mentioned.

Ans. It is quite correct that the Indian Penal Code prohibits ligation of fallopian tubes (sterilisation) if the same is done in cases where there are no medical indications. It is to be noted, however, that the operations regarding vasectomy and ligation of fallopian tubes are now being done extensively throughout India for socio-economic reasons, viz., family planning and so long as the operations are done for family planning purpose as envisaged by the Government of India including the State Governments, there cannot be any legal liability. Only thing which is necessary is that the operation should be done after obtaining consent of the husband or the wife as the case may be.

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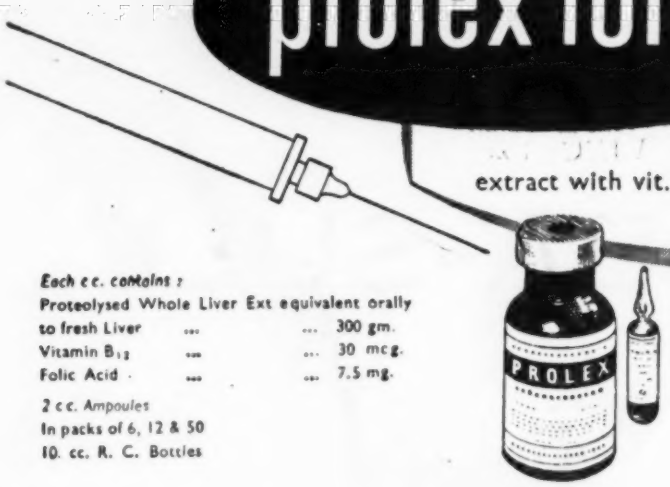

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SUPPLEMENT
Journal of the Indian Medical Association

VOL. 33 No. 11 CALCUTTA DECEMBER 1, 1959

ASSOCIATION NOTES

XXXVI ALL-INDIA MEDICAL CONFERENCE, 1959, INDORE

Dr. R. A. Bhagwat, the hony. organising secretary of the 36th All-India Medical Conference, has issued the following circular for the intending delegates and visitors to the Conference.

"The XXXVI All-India Medical Conference is scheduled to be held on 27th, 28th and 29th December, 1959, in the city of Indore. Being the first Conference of its kind organised by the Indore Branch of the Indian Medical Association in Madhya Pradesh State, we take this opportunity to receive a mammoth gathering of eminent colleagues from every nook and corner of India and also abroad in this historic city of Indore.

Indore is described as a treasure of beauty and joy with a considerable historical significance occupying a prominent place in the history of Malav-Desh (Malwa), a repository of Indian culture. Not a single epoch in Indian history has failed to leave its landmark on this 'heart of India', which has witnessed the rise and fall of Mauryas, Guptas, Paramars and Moghul empires as well as the descendants of that great daughter of this soil, "Devi" Ahilya Bai Holkar. Artists of repute like Vikram, Bharathari, Kalidas, Bhavabhooti, Tansen and Baiju Bawara all thrived in Malwa.

Indore is today the industrial capital and one of the biggest cities of Madhya Pradesh. Situated 1800 ft. above sea level, it has a most pleasant climate, whose refreshing cool nights even in the beastly hot season of the year are liked by all.

The centres of attraction in the city are :

(a) *Massive buildings* : Seven-storeyed Old Palace and M. Y. Hospital, Hukumchand's Glass Temple, Sukhniwas, Lal Bagh and Manek Bagh Palaces, Shram Shibir, Mahatma Gandhi Town Hall, Indore Municipal Corporation, High Court, etc.

(b) *Educational institutions* : M. G. M. Medical College, Daly College, Govindram Seksaria Technological Institute, Engineering College, Rajkumar Singh Ayurvedic College, Gujrathi Samaj Degree College, Christian College, Holkar College, Girls' Degree College, Kasturbagram.

(c) *Cool spots, gardens and greenery* : Nehru Park, Swimming Pool nearby, Piplia, Shirpur and Bercha Tanks, Syphon Work at Yeshwant Sagar and Filter Station at Devdharam, Navlakha Garden, etc.

(d) *Industries* : Bhandari Iron and Steel Works, Indore Malwa United Mills, Hukamchand Mills, Rajkumar Mills, Nandlal Bhandari Mills, Kanhayalal Bhandari Mills, Swadeshi Cotton and Flour Mills, M. P. Industrial Estate, Malwa Vanaspati and V. Oil Co., etc.

Around Indore within motoring distances are several places for excursion, chief among them are :

1. Ujjain—34 miles from Indore—Mahankaleshwar shrines, Observatory, Kaliadesh Mahal, Harsidhhi Temple, Ramghat, Bharthari cave etc. 2. Maheshwar—Oldest capital of Holkar dynasty, Sahastradhara (in summer), Flight of steps of Narbada Ghat, etc. 3. Bagh Caves—120 miles from Indore—Nine Buddhist caves. 4. Sanchi—160 miles from Indore—Stupas. 5. Gwalior—307 miles from Indore—Fort, Gujri Mahal, Jai Vilas Palace, Moti Mahal Secretariat, Tombs of Tansen and Mohammad Ghaus, Madhav Sagar Lake and Memorial of Rani of Jhansi, etc. 6. Onkareshwar—50 miles from Indore—Beautiful island and the shrine of Onkar. 7. Dhar—City of sword blades and 21 lakes, Bhoj Shala, Darbar Hall, Harsiddhi's temple, etc. 8. Mandu—Man dupa-durga—70 miles from Indore—Jahaj Mahal, Hindola Mahal, Jama Masjid, Ashrafi Mahal, Hoshang Shah's tomb, the Champa Baori, Katora Baori, Baz Bahadur's palace, Rupmati Pavillion, Echo Point, etc. 9. Amarkantak—A place of pilgrimage and scenic beauty. 10. Ashirgarh—Fort. 11. Chanderi—Handloom craft. 12. Chitrakot—Chitrakot Falls. 13. Muktagiri—Place of pilgrimage for Jains. 14. Shivpuri—Health resort, Forest greenery, National Park, Sakhya Sagar Dam and places of shooting. 15. Panchmahri—A summer capital of Madhya Pradesh, place for golf and shooting. 16. Bhilai—Iron and Steel Plant. 17. Nepanagar—Newsprint and Paper Mills. 18. Chambal—Chambal Hydel Works and Gandhi Sagar Dam. 19. Bhopal—Capital of Madhya Pradesh, Heavy Electricals Ltd., and Bhopal Tal. 20. Rewa—Forests.

The venue of the Conference is the M. G. M. Medical College campus.

Arrangements are under way to receive the delegates and visitors and make their stay as comfortable and pleasant as possible. Plans have been laid to exhibit pharmaceutical products from all over India and industrial products of the State in an exhibition organised in the campus.

While extending to you a cordial welcome on behalf of the Reception Committee, we request you to intimate us your desire whether you are inclined to attend the Conference, well ahead of the scheduled time so that we can arrange all possible facilities for you before your arrival to Indore.

Your KIT must contain bedding with a blanket. Gaberdine or sufficient woollen clothes to protect against chill during December. Your own lock and key will prove to be your best companions.

Your accommodation will be provided by us in the campus and in hotels as far as possible. All efforts are being made to make your accommodation as pleasant and comfortable as possible. A separate form in this respect is being sent to you, which may also be filled in and returned.

The hotel accommodation varies from Rs. 20/- to Rs. 40/- per day for lodging only

All catering will be arranged in the College campus and will consist of both non-vegetarian and vegetarian types. The charges will be Rs. 12/- per head per day for non-vegetarian and Rs. 10/- per head per day for

vegetarian diet. Children below 8 years will be charged half rates.

Sight-seeing and shopping facilities are being arranged for you (to Mandu, Ujjain and Onkareshwar, etc.).

Our volunteers will receive you at Indore railway station, bus stands and aerodrome and arrange your transport to the destination as per your requirements.

Your co-operation will contribute greatly to the success of our conference, if you please register your name by remitting Rs. 5/- as registration fee and reserve your accommodation with the necessary charges before the 10th December, 1959. On receipt of your registration fee, we will send you the Railway Concession form and other forms, if any, for your journey as a member of the Conference.

For reaching Indore you have to come via Khandwa, Bhopal, Ratlam, Nagda, or Ujjain train where you get connecting trains to Indore. By road Indore is on Bombay Agra Road and is connected by several roads.

If, however, your trip has to be cancelled, your advance remittance for registration and accommodation will be refunded in full minus M.O. commission provided information is received before the 21st December, 1959 by registered post.

Programme

23rd and 24th December, 1959
Working Committee ... 68th Session
25th and 26th December, 1959
Central Council Meeting ... 21st Annual Session
27th December, 1959
Inaugural Session of the Conference (Forenoon)
Inauguration of Pharmaceutical Exhibition (Afternoon)
28th December, 1959
Open Session of the Conference (Forenoon)
29th December, 1959
Central Council Meeting—Ordinary Session.

The rest of the time on the 27th, 28th and 29th Dec., 1959 will be utilised for the Scientific Session and social programmes.

Approach Indore by Air, Rail and Road

To reach Indore you have to get down at Ratlam, Nagda on Western Railway while Khandwa and Bhopal on Central Railway, via Central Railway Indore is connected by broad gauge via Bhopal, Ujjain and Dewas, while Khandwa and Ratlam are connected by metre gauge.

The Air Lines service has started operating from 1st of November 1959 between Bombay, Indore, Bhopal, Aurangabad and Delhi on alternate days. For detailed programme you can contact Airlines Corporation.

By road Indore is on Bombay-Agra Road while it is connected by several roads which can be seen from the road maps.

Central Railway:

1. Calcutta Mail via Allahabad reaches Khandwa
   From Bombay 6-15
   From Allahabad 1-47
2. Calcutta Mail via Nagpur
   reaches Bhusawal 1-57
   Connections for Khandwa
   (a) Calcutta Mail from Bombay 4-03
   Pathankot Express from Bombay ... 6-26
3. Punjab Mail at Khandwa
   From Bombay 1-39
   From Delhi 2-32
4. Punjab Mail at Bhopal
   From Bombay 7-10
   From Delhi 21-00
5. Pathankot Express at Bhopal
   From Delhi 12-45
   From Bombay 15-40
6. Pathankot Express at Khandwa
   From Delhi 18-40
   From Bombay 9-15
7. Janata Express at Bhopal
   From Madras 01-35
   From Delhi 01-30
8. De-Luxe at Bhopal
   From Madras 22-25
   From Delhi 04-33
9. Kashi Express at Khandwa
   From Allahabad 08-47
   From Bombay 16-50
10. Nagpur Express at Bhusawal
    From Bombay 05-25
    From Nagpur 22-15
11. Grand Trunk Express at Bhopal
    From Madras 19-00
    From Delhi 07-15

Western Railway:

1. Frontier Mail at Ratlam
   From Bombay 06-23
   From Delhi 21-10
2. Dehra Dun Express at Ratlam
   From Delhi 14-59
   From Bombay 13-49
3. De-Luxe at Ratlam
   From Delhi 04-07
   From Bombay 23-05
4. Delhi Janata at Ratlam
   From Bombay 21-10
   From Delhi 06-16

Bhopal—Ujjain—Indore Broad Gauge...
Bhopal ... ... D. 13-15 21-02
Bilaspur Express 6-05
From Indore to Bilaspur ... ... A 6-50
Bilaspur Express 15-18

Indore to Bhopal via Ujjain
Indore ... ... D 14-05 Bilaspur Exp.
Indore ... ... D 20-20 to Bhopal

Khandwa to Indore Metre Gauge

Khandwa ...	... D	19-50	3-06	10-45
Indore ...	... A	0-55	9-27	16-50

Indore to Khandwa Metre Gauge

Indore ...	... D	10-55	19-29	2-30
Khandwa ...	... A	16-20	0-53	8-12

Ratlam to Indore

Ratlam ...	... D	6-50	15-32	22-32
Indore ...	... A	10-30	19-14	2-15

Indore to Ratlam

Indore ...	... D	1-53	9-27	16-51
Ratlam ...	... A	5-40	13-52	20-40

BRANCH NOTES

ANAMALLAI BRANCH—A meeting was held on 27-6-59, when 3 films "Defeat Tuberculosis", "His fighting chance" and "The Undefeated", lent by the British Information Service, were shown.

A meeting of the branch was held on 25th July 1959. Election of one President, 3 Vice-Presidents for the Centre was held. After that, two cases of interest, one "Rheumatic Carditis", and another, "Heavy infection of Roundworms" were demonstrated by Dr. M. P. Gundappa.

The clinical meeting for the month of August was held on 22-8-59, when Dr. Jayachandran gave a talk on Cholera. Election for one President and 2 Vice-Presidents for the State Branch of the I.M.A. was held.

A monthly meeting of the branch was held on 26-9-59 when Dr. Narayanan demonstrated a few x-ray films of interest.

The clinical meeting of the branch for October was held on 24-10-59 when Dr. John gave a talk on "Convulsions in children."

ASANSOL BRANCH—The annual general meeting was held on 7-10-59 Dr. K. Damodaran presided. The annual reports and the accounts for 1958-59 were accepted. Office-bearers for 1959-60 were elected with Dr. K. Damodaran as president; Dr. H. N. Mukherjee, Dr. N. C. Das Gupta and Dr. D. D. Banerjee as vice-presidents; Dr. L. C. Ghosh, as hony. general secretary; Dr. D. P. Ghosh and Dr. S. K. Biswas as hony. joint secretaries, Dr. G. R. Mitra as treasurer; Dr. K. Damodaran and Dr. N. L. Banerjee as members of the Central Council.

BAJALI BRANCH—A meeting was held on 12-10-59. Nine members were present. Dr. H. Choudhury presided. A case of cholecystitis was demonstrated and discussed.

A meeting of the branch was held on 1-11-59. Eleven members were present. Dr. A. Deb presided. The president and vice-president of the 10th Assam State Medical Conference were elected. The secretary was requested to find out a place temporarily for the office. Members were requested to pay off the arrears of relief fund contribution.

BAUD-PHULBANI BRANCH—The annual meeting of the branch was held on 1-9-59. A scientific session was arranged in which the following discussions were held: (1) Importance of Preventive Medicine by Dr. N. K. Bidyadhar; (2) Pleural Sepsis with Tetanus by Dr. B. Dei; (3) Medico-legal Aspect of an epileptic patient introducing an wooden peg in the abdomen by Dr. U. S. Sastry. Office-bearers for 1959-60 were elected with Dr. N. K. Bidyadhar as president, Dr. N. P. Mohanty as secretary and treasurer.

BHUBANESWAR BRANCH—The annual meeting of the branch was held on 7-11-59. Dr. R. P. Misra, Minister of Health, Orissa was the Chief Guest. Office-bearers for 1959-60 were elected with Dr. G. C. Pattanaik as president, Dr. B. C. Biswal as vice-president; Dr. K. C. Roy as secretary; Dr. Leelabati Patnaik as jt. secretary; Dr. G. Mahapatra as treasurer.

CHITRADURGA BRANCH—A general body meeting was held on 14-11-59. Dr. H. S. Lakshminarayana presided. Dr. H. S. Lakshminarayana spoke on Oral Antidiabetics and Dr. M. C. Marulappa on Pseudo Plague. Office-bearers were elected with Dr. H. S. Lakshminarayana as president; Dr. B. Nageswar as vice-president; Dr. B. Ramakrishna Reddy as secretary; Dr. A. G. Veeranna as jt. secretary; Dr. M. Rajeswari as treasurer. Dr. S. Sivanappa was elected to the Central Council.

CUTTACK BRANCH—The annual meeting of the branch was held on 1-10-59. The annual report of the secretary was read. During the year 1958-59, 6 scientific meetings were held and clinical subjects were discussed. During the year efforts were made to start refresher course for general practitioners and post-graduate course for graduates, in the S. C. B. Medical College. Appeal was sent to all members to contribute to the Building Fund (Central Office). The annual subscription was raised to Rs. 12/- per member annually from 1-10-59. Office-bearers for 1959-60 were elected with Dr. G. Pattanaik as president; Dr. S. Mukherjee and Dr. H. Roy (No. 1) as vice-presidents; Dr. (Mrs.) Nirupama Rath as secretary and Dr. (Miss) S. S. Pattanaik and Dr. B. B. Tripathy as joint secretaries, Dr. S. Acharya as auditor.

DHULIA BRANCH—The annual meeting of the branch was held on 3-10-59. Office-bearers for 1959-60 were elected with Dr. G. V. Karve as president, Dr. V. D. Deshmukh as vice-president; Dr. D. S. Shah as hony. secretary; Dr. S. M. Shinde as jt. hony. secretary; Dr. B. D. Deo as treasurer.

A special meeting was held on 10-10-59 to felicitate Dr. B. B. Kirtane and Dr. G. H. Thuse on being elected as president and vice-president of II Maharashtra Territorial Conference at Khamgaon.

A monthly meeting was held on 8-11-59. Dr. V. V. Deshmukh spoke on Modern Trends in Anaesthesia.

FAIZABAD BRANCH—A meeting of the branch was held on 18-10-59 to welcome Dr. Bholanath, the president of the U.P. State Branch. Thirty members were present. Dr. Pratap Bahadur presided. Dr. Bholanath stressed the need of becoming members of I.M.A. and called upon the members to subscribe for the Central Building Fund. Dr. Bholanath helped in the formation of a new branch at Tanda. A condolence resolution was passed on the death of Dr. S. K. Shome of Dehra Dun.

HARDOI BRANCH—The report of the branch for the year 1959-60 shows that 13 meetings were held during the year in which interesting cases were discussed and talks held on scientific and socio-medical current problems.

The annual meeting was held on 17-10-59 and office-bearers for 1959-60 were elected with Dr. S. N. L. Asthana as president; Dr. S. B. Shingal as vice-president; Dr. Purna Deva as hony. secretary, Dr. K. D. Pandia as hony. joint secretary and Dr. B. N. Gupta as hony. treasurer. Dr. B. N. Gupta and R. D. Misra were elected representatives of the U. P. branch council.

JALGAON BRANCH—The annual meeting was held on 18-10-59. The annual report and accounts for 1958-59 were adopted. Office-bearers for 1959-60 were elected with Dr. D. R. Kulkarni as president, Dr. D. B. Pendhacker as hony. secretary. During 1958-59, 10 clinical meetings were held. Funds for building a house of the branch were being raised by dramatic shows by the members.

JORHAT BRANCH—The annual general meeting of the branch was held on 19-10-59 with Dr. B. B. Sengupta in the chair. The annual report and the annual accounts of 1958-59 were adopted. Office-bearers for 1959-60 were elected with Dr. B. B. Sengupta as president and Dr. A. R. Borthakur as hony. secretary.

KHAMGAON BRANCH—The annual report of the branch for 1958-59 shows that 12 clinical meetings were held during the year in which important subjects were discussed. Four members of the branch attended the Refresher Course at Akola. The World Health Day was celebrated on 7-4-59. The B. C. G. Day was observed on 21-6-59.

KHAMMAMETH BRANCH—A general body meeting of the branch was held on 7-11-59 with Dr. Ghulam Murtaza in the chair. The annual report and the accounts for the year 1958-59 were presented. Election of the president and 3 vice-presidents of the State branch was conducted. Office-bearers of the branch for 1959-60 were elected with Dr Ghulam Murtaza as president; Dr. J. E. Ganswick as vice-president; Dr. N. V. Sitharama Rao as hony. secretary and Dr. N. V. Sitharama Rao as representative to the State and Central Council. The Khammameth Municipality was requested to allot a suitable plot of land for a building of the branch. Dr. Y. Radhakrishna Murthy presented a case of Ventricular Septal Defect. Dr. J. E. Ganswick presented 2 cases of classical electric burns.

MADHIPURA BRANCH—A meeting of the branch was held on 24-10-59. Eleven members were present. The branch recommended the establishment of a medical college at Purnea. The meeting requested the government to arrange electrical installation at the local hospital. According to the members, the CAS and other doctors in Block be placed under the direct control of the Civil Surgeon and S.E.M.O. for administration and work, the pay scale of all service be same, all medical officers be provided with free quarters, a special rural allowance be given to all doctors posted in rural areas, non-practising allowance be substituted by an increased pay to doctors.

MADRAS CITY BRANCH—An executive committee meeting of the branch was held on 28-10-59 with Dr. G. Sriramulu in the chair. It was decided to give Dr. K. V. Swamy a letter of authorisation to be the convener of the proposed tour of Eastern countries, without any financial commitments to the branch. Seventy three new members were admitted. The Annual Day was fixed for

8th February 1960. The committee decided to recommend to the general body to exempt the new members from paying increased subscription. A tentative programme was arranged for the visitors, Dr. S. Wand and Dr. D. P. Stevenson.

MAHARASHTRA TERRITORIAL BRANCH—The following office-bearers for 1959-60 were elected at the annual general meeting held on 24-10-59: President—Dr. B. B. Kirtane; Vice-President—Dr. J. V. Barve, Dr. G. H. Thuse, Dr. G. K. Gan; Jt. Hony. Secretaries—Dr. S. N. Ranade, Dr. M. G. Bhide, Dr. D. S. Shah; Hony. Treasurer—Dr. N. V. Khalap. Dr. C. N. Chandrachud and Dr. B. K. Vinchure were elected to the Central Working Committee with Dr. G. K. Gan and V. B. Devalbhakta as alternate members.

MONGHYR BRANCH—The annual meeting of the branch was held on 4-11-59. Dr. J. Bhagat presided. The annual report and the audited accounts were adopted. Office-bearers for 1959-60 were elected with Dr. K. P. Mitra as president; Dr. L. C. Prasad and Dr. J. Prasad as vice-presidents; Dr. B. N. Banerjee as hony. secretary; Dr. D. S. Tara and Dr. J. Bhagat as hony. joint secretaries. Dr. B. B. Bose was elected to the Central Council.

NELLORE BRANCH—The annual general meeting was held on 24-10-59. After tea by Dr. C. Rajagopalan, Dr. Al. Annamalaj of Madras gave a talk on Cough: Its Diagnosis and Treatment. Dr. M. Natarajan of Madras spoke on Skin Diseases in Private Practice.

Office-bearers for 1959-60 were elected with Dr. J. Prakasa Rao as President; Dr. V. Sundararajan and Dr. Mrs. A. Mathews as vice-presidents; Dr. A. Sreenivasulu as secretary and Dr. M. V. Krishna Reddy as jt. secretary and Treasurer.

The annual dinner was held after the meeting.

PILIBHIT BRANCH—The annual report of the branch for 1958-59 shows that 4 meetings were held during the year and clinical subjects, discussed.

The annual meeting was held on 3-10-59. Office-bearers for 1959-60 were elected with Dr. M. P. Chaturvedi as president, Dr. A. C. Agarwal as vice-president, Dr. V. C. Agarwal as secretary and Dr. I. J. Bhatnagar as joint secretary; Dr. H. S. Gill as representative to the Central Council; and Dr. B. R. Mahajan to the U. P. State Branch Council.

PURULIA BRANCH—A meeting of the branch was held on 30-10-59. Office-bearers for 1959-60 were elected with Dr. A. T. Roy as president; Dr. P. K. Mallick as vice-president; Dr. A. K. Gupta as secretary; Dr. S. Palit as joint secretary; Dr. A. Kabiraj as member of the Provincial Council; Dr. N. P. Banerjee as member of the Central Council.

RAIGARH BRANCH—A general meeting of the branch was held on 8-11-59. Office-bearers for 1959-60 were elected with Dr. (Miss) C. Saigal as president; Dr. S. K. Mitra as secretary and Dr. S. L. Patel as joint secretary.

ROURKELA BRANCH—The annual general body meeting of the branch was held on 24-10-59 with Dr. E. K. K. Pillai in the chair. Twenty members were present. Office-bearers for 1959-60 were elected with Dr. S. K. Das as president, Dr. M. P. N. Pande as vice-president, Dr. S. K. Ghosh as secretary, Dr. (Mrs.) U. Bamberry as treasurer.

SRIKAKULAM DISTRICT BRANCH—A meeting of the branch was held at Parlakimedi on 24-10-59. A Symposium on Peptic Ulcer was initiated. Dr. T. Dayananda Saraswathy presided. Dr. K. Jagannadha Rao, Dr. K. Bhaskara Rao, Dr. M. Suryanarayana Murty, Dr. D. Bhaskara Rao, Dr. M. S. R. Anjaneyulu, Dr. P. Raghanadha Raju and Dr. M. V. Rama Rao participated in the symposium.

TITAGARH BRANCH—The annual general meeting of the branch was held on 30-10-59. Dr. J. C. Banerjee presided. Office-bearers for the year 1959-60 were elected with Dr. H. P. Bose as president; Dr. G. M. Chatterjee and Dr. J. C. Banerjee as vice-presidents; Dr. A. Chatterjee as hony. secretary; Dr. B. Banerjee and Dr. S. Das as jt. assistant secretaries; Dr. B. Das as treasurer; Dr. C. N. Chowdhuri was elected to the Central Council.

TRIPURA BRANCH—The 10th annual general meeting was held on 30-10-59. A film show was given on TB, Scientific talks by Dr. B. C. Arora and Dr. R. C. Ghosh. Office-bearers for 1959-60 were elected with Dr. A. C. Bhattacharjee as president; Major D. H. Waller as vice-president; Dr. G. Chakraborty as hony. secretary.

X ASSAM STATE MEDICAL CONFERENCE, JORHAT, 1960

The 10th Assam State Medical Conference will be held at Jorhat on January 2-4, 1960. A reception committee has been formed with Dr. K. Soikia, retd. D.H.S. Assam as Chairman. A pharmaceutical and scientific exhibition will be held and a souvenir published on this occasion. Members are requested to contribute scientific papers to be read in the scientific seminar.

* * *

XIV MADRAS STATE MEDICAL CONFERENCE, MADURAI, 1960

The 14th Madras State Medical Conference will be held at Madurai on January 23-24, 1960. Dr. P. Vadamalayan has been elected chairman of the reception committee, Drs. C. K. P. Menon and K. Gopal, vice-chairmen, Dr. T. Thirugnanam, hony. general secretary and Dr. A. Arunachalam, the hony. treasurer. Necessary sub-committees have also been formed. There will be a scientific session and a souvenir will be published.

* * *

III ANDHRA PRADESH MEDICAL CONFERENCE, ELURU, 1960

The 3rd Andhra Pradesh Medical Conference will be held at Eluru, West Godavary, on February 27-28, 1960. The Open Session will be followed by a scientific session. A scientific and industrial exhibition is also being arranged. Further information may be had from Dr. V. Venkatarao, Organising Secretary of the Conference, Powerpet, Eluru, West Godavary District.

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